



CERTIFICATE

Issued Date: Apr. 08, 2009
Report No. : 094061R-ITCEP07V06

This is to certify that the following designated product

Product : Notebook
Trade name : MSI
Model Number : MS-1682, CX600, CX600X ("X"=0~9 or A~Z)
Company Name : MICRO-STAR INT'L Co., LTD.

This product, which has been issued the test report listed as above in QuieTek Laboratory, is based on a single evaluation of one sample and confirmed to comply with the requirements of the following EMC standard.

EN 55022: 2006

EN 61000-3-2: 2006

EN 61000-3-3: 1995+A1: 2001+A2: 2005

EN 55024: 1998+A1: 2001+A2: 2003

IEC 61000-4-2 Edition 1.2: 2001-04

IEC 61000-4-3 Edition 3.0: 2006

IEC 61000-4-4: 2004

IEC 61000-4-5 Edition 2.0: 2005

IEC 61000-4-6 Edition 2.2: 2006

IEC 61000-4-8 Edition 1.1: 2001-03

IEC 61000-4-11 Second Edition: 2004-03

TEST LABORATORY

Vincent Lin / Manager



Test Report

Product Name : Notebook

Model No. : MS-1682, CX600, CX600X ("X"=0~9 or A~Z)

Applicant : MICRO-STAR INT'L Co., LTD.

Address : No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.

Date of Receipt : 2009/03/27

Issued Date : 2009/04/08

Report No. : 094061R-ITCEP07V06

Report Version : V2.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF, NVLAP or any agency of the Government.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

CE Declaration of Conformity

The following product is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (2004/108/EC). The listed standards as below were applied:

The following Equipment:

Product : Notebook
Model Number : MS-1682, CX600, CX600X ("X"=0~9 or A~Z)
Trade Name : MSI

This product is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (2004/108/EC). For the evaluation regarding EMC, the following standards were applied:

RFI Emission:

EN 55022:2006 Class B : Product family standard
EN 61000-3-2:2006 Class D : Limits for harmonic current emission
EN 61000-3-3:1995+A1: 2001+A2: 2005 : Limitation of voltage fluctuation and flicker in low-voltage supply system

Immunity:

EN 55024:1998+A1: 2001+A2: 2003 : Product family standard

The following importer/manufacturer is responsible for this declaration:

Company Name : _____
Company Address : _____
Telephone : _____ Facsimile : _____

Person is responsible for marking this declaration:

_____ Name (Full Name)	_____ Position/ Title
_____ Date	_____ Legal Signature

CE Statement of Conformity

This certifies that the following designated product:

Product : Notebook
Model Number : MS-1682, CX600, CX600X ("X"=0~9 or A~Z)
Trade Name : MSI
Company Name : MICRO-STAR INT'L Co., LTD.

This product is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (2004/108/EC). For the evaluation regarding EMC, the following standards were applied:

RFI Emission:

EN 55022:2006 Class B : Product family standard
EN 61000-3-2:2006 Class D : Limits for harmonic current emission
EN 61000-3-3:1995+A1: 2001+A2: 2005 : Limitation of voltage fluctuation and flicker in low-voltage supply system

Immunity:

EN 55024:1998+A1: 2001+A2: 2003 : Product family standard



The verification is based on a single evaluation of one sample of above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab. Logo.

Test Report Certification

Issued Date : 2009/04/08

Report No. : 094061R-ITCEP07V06



Product Name : Notebook

Applicant : MICRO-STAR INT'L Co., LTD.

Address : No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.

Manufacturer : MICRO-STAR INT'L Co., LTD.

Model No. : MS-1682, CX600, CX600X ("X"=0~9 or A~Z)

Rated Voltage : AC 230 V / 50 Hz


EUT Voltage : AC 100-240V, 50-60Hz

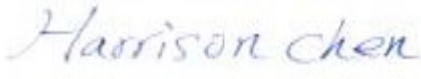
Trade Name : MSI


Applicable Standard : EN 55022: 2006 Class B
 EN 55024: 1998+A1: 2001+A2: 2003
 EN 61000-3-2:2006
 EN 61000-3-3:1995+A1: 2001+A2: 2005

Test Result : Complied

Performed Location : Quietek Corporation (Linkou Laboratory)
 No.5-22,Ruei-Shu Valley, Ruei-Ping Tsuen Lin Kuo Shiang,
 Taipei, 244 Taiwan, R.O.C.
 TEL:+866-2-8601-3788 / FAX:+886-2-8601-3789

Documented By : 
 (Adm. Specialist / Joanne Lin)

Reviewed By : 
 (Engineer / Harrison Chen)

Approved By : 
 (Manager / Vincent Lin)

Laboratory Information

We , **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scopes:

Taiwan R.O.C.	: BSMI, NCC, TAF
Germany	: TUV Rheinland
Norway	: Nemko, DNV
USA	: FCC, NVLAP
Japan	: VCCI

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://tw.quietek.com/modules/enterprise/services.php?item=100>
The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.

TEL:+886-3-592-8858 / FAX:+886-3-592-8859

E-Mail : service@quietek.com



LinKou Testing Laboratory :

No. 5, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan, R.O.C.

TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789

E-Mail : service@quietek.com



Suzhou (China) Testing Laboratory :

No. 99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China.

TEL : +86-512-6251-5088 / FAX : +86-512-6251-5098

E-Mail : service@quietek.com



TABLE OF CONTENTS

Description	Page
1. General Information	7
1.1. EUT Description.....	7
1.2. Mode of Operation	10
1.3. Tested System Details	14
1.4. Configuration of Tested System	15
1.5. EUT Exercise Software.....	16
2. Technical Test	17
2.1. Summary of Test Result.....	17
2.2. List of Test Equipment	18
2.3. Measurement Uncertainty.....	21
2.4. Test Environment.....	23
3. Conducted Emission (Main Terminals).....	24
3.1. Test Specification	24
3.2. Test Setup.....	24
3.3. Limit	24
3.4. Test Procedure	25
3.5. Deviation from Test Standard.....	25
3.6. Test Result	26
3.7. Test Photograph	38
4. Conducted Emissions (Telecommunication Ports).....	40
4.1. Test Specification	40
4.2. Test Setup.....	40
4.3. Limit	40
4.4. Test Procedure	41
4.5. Deviation from Test Standard.....	41
4.6. Test Result	42
4.7. Test Photograph	60
5. Radiated Emission.....	61
5.1. Test Specification	62
5.2. Test Setup.....	62
5.3. Limit	62
5.4. Test Procedure	63
5.5. Deviation from Test Standard.....	63
5.6. Test Result.....	64
5.7. Test Photograph	68
6. Harmonic Current Emission	70

6.1.	Test Specification	70
6.2.	Test Setup.....	70
6.3.	Limit.....	70
6.4.	Test Procedure	72
6.5.	Deviation from Test Standard.....	72
6.6.	Test Result.....	73
6.7.	Test Photograph	77
7.	Voltage Fluctuation and Flicker.....	78
7.1.	Test Specification	78
7.2.	Test Setup.....	78
7.3.	Limit.....	78
7.4.	Test Procedure	79
7.5.	Deviation from Test Standard.....	79
7.6.	Test Result.....	80
7.7.	Test Photograph	82
8.	Electrostatic Discharge	83
8.1.	Test Specification	83
8.2.	Test Setup.....	83
8.3.	Limit.....	83
8.4.	Test Procedure	84
8.5.	Deviation from Test Standard.....	84
8.6.	Test Result.....	85
8.7.	Test Photograph	86
9.	Radiated Susceptibility	88
9.1.	Test Specification	88
9.2.	Test Setup.....	88
9.3.	Limit.....	88
9.4.	Test Procedure	89
9.5.	Deviation from Test Standard.....	89
9.6.	Test Result.....	90
9.7.	Test Photograph	92
10.	Electrical Fast Transient/Burst.....	93
10.1.	Test Specification	93
10.2.	Test Setup.....	93
10.3.	Limit.....	93
10.4.	Test Procedure	94
10.5.	Deviation from Test Standard.....	94
10.6.	Test Result.....	95

10.7.	Test Photograph	97
11.	Surge	98
11.1.	Test Specification	99
11.2.	Test Setup.....	99
11.3.	Limit.....	99
11.4.	Test Procedure	100
11.5.	Deviation from Test Standard.....	100
11.6.	Test Result	101
11.7.	Test Photograph	103
12.	Conducted Susceptibility	104
12.1.	Test Specification	104
12.2.	Test Setup.....	104
12.3.	Limit.....	105
12.4.	Test Procedure	105
12.5.	Deviation from Test Standard.....	105
12.6.	Test Result	106
12.7.	Test Photograph	108
13.	Power Frequency Magnetic Field	110
13.1.	Test Specification	110
13.2.	Test Setup.....	110
13.3.	Limit.....	110
13.4.	Test Procedure	110
13.5.	Deviation from Test Standard.....	110
13.6.	Test Result	111
13.7.	Test Photograph	112
14.	Voltage Dips and Interruption.....	114
14.1.	Test Specification	114
14.2.	Test Setup.....	114
14.3.	Limit.....	114
14.4.	Test Procedure	115
14.5.	Deviation from Test Standard.....	115
14.6.	Test Result	116
14.7.	Test Photograph	117
15.	Attachment	119
	EUT Photograph	119

1. General Information

1.1. EUT Description

Product Name	Notebook
Trade Name	MSI
Model No.	MS-1682, CX600, CX600X ("X"=0~9 or A~Z)

Component	
Power Adapter (1)	<p>MFR: DELTA, M/N: ADP-65HB BB</p> <p>Input: AC 100-240V, 50-60Hz, 1.5A</p> <p>Output: DC 19V, 3.42A</p> <p>Cable Out: Non-Shielded1.8m with one ferrite core bonded.</p> <p>Power Cord: Non-Shielded1.8m</p>
Power Adapter (2)	<p>MFR: LI SHIN, M/N: 0335A1965</p> <p>Input: AC 100-240V, 50-60Hz, 1.7A</p> <p>Output: DC 19V, 3.42A</p> <p>Cable Out: Non-Shielded, 1.8m with one ferrite core bonded.</p> <p>Power Cord: Non-Shielded1.8m</p>

Keyparts List		
Item	Vendor	Model name
M/B	MSI	MS-1682
CPU	Intel	P8600, 2.4GHz
		P8400, 2.26GHz
		P7350, 2.0GHz
		T5900, 2.2GHz
		T5800, 2.0GHz
		T3400, 2.16GHz
		T3200, 2.0GHz
LCD	CMO	N156B3-L02, 15.6"
		N156B3-L01, 15.6"
	Samsung	LTN160AT01-A04, 16 "
		LTN160AT01-A01, 16 "
Inverter (PWM)	Sumida	TWS-400-9652
	SAMPO	YIVNMS0018D11-B
	Mitac	DA-1A08-MS02L
HDD	WD (1st)	WD1600BEVT, 160GB
		WD2500BEVT, 250GB
		WD3200BEVT, 320GB
	Fujitsu (2nd)	MHZ2160BH, 160GB
		MJA2250BH, 250GB
		MJA2320BH, 320GB
		MHZ2250BH, 250GB
		MHZ2320BH, 320GB
ODD	SONY	AD-7580S
	SONY	AD-7560S
	HLDS	GT10N
	TSST	TS-L633
	PLDS	DS-8A2S
RAM	TRANSCEND	TS128MSQ64V8U
	TRANSCEND	JM800QSU-1G
	A-DATA	HYOVF1A0834Z
	SAMSUNG	M470T2864QZ3-CF7
	HYNIX	HYMP112S64CP6-S6
	ELPIDA	GU331G0ALEPR612F
	TRANSCEND	TS256MSQ64V8U

RAM	TRANSCEND	JM800QSU-2G
	Champion	FOD2SXEMR-8G1
	A-DATA	HYOVF1B163BZ
	ELPIDA	GU332G0ALEPR8H2F
	SAMSUNG	M470T5663QZ3-CF7
	HYNIX	HYMP125S64CP8-S6
MDC	Agere	MA560-7
	Motorola	ML3054
WLAN	Ralink	RT3090 (MS-6891)
	Atheros	AR5B95 (AW-NE785H)
BT	MSI	MS-6837D
WEBCAM	BISON	BN29M6S8-010
	AZUREWAVE	AM-1C017
Adapter	LI SHIN	0335A1965
	DELTA	ADP-65HB BB
Battery	CELXPART	BTY-L74, 11.1V, 4400mAh
Touch Pad	SYNAPTICS	TM61PDZG300
	SENTELIC	TPA2D2IC99

Note:

The EUT is including three models, The MS-1682 for MSI and the CX600, CX600X PRO for different marketing requirement.

1.2. Mode of Operation

Quietek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
Mode 1	
Mode 2	
Mode 3	
Mode 4	
Mode 5	
Mode 6	
Mode 7	
Mode 8	
Mode 9	
Mode 10	
Mode 11	
Mode 12	
Mode 13	
Final Test Mode	
Emission	Mode 1 Mode 2
Immunity	Mode 1 Mode 2

ITEM	MODE 1 LCD+CRT 1366*768/60Hz	MODE 2 LCD+CRT 1366*768/60Hz
CPU	INTEL, P8600, 2.4GHz	INTEL, T8600, 2.4GHz
Panel	SAMSUNG, LTN160AT01-A04, 16"	CHIMEI, N156B3-L02, 15.6"
H.D.D	WD, WD3200BEVT	WD, WD3200BEVT
ODD	SONY, AD-7580S	SONY, AD-7560S
DRAM	TRANSCEND, TS256MSQ64V8U	TRANSCEND, TS128MSQ64V8U
Wireless LAN	ATHEROS, AR5B95 (AW-NE785H)	Ralink, RT3090(MS-6891)
CCD	AZUREWAVE, AM-1C017	BISON, BN29M6S8-010
Battery Pack	CELXPART, BTY-L74	CELXPART, BTY-L74
AC Adapter	DELTA, ADP-65HB BB	LI SHIN, 0335A1965
MODEM	MOTOROMA, ML3054	AGERE, MA560-7
BT	MSI, MS-6837D	MSI, MS-6837D
INVERTER	SUMIDA, TWS-400-9652	SAMPO, YIVNMS0018D11-B
TOUCH PAD	SYNAPTICS, TM61PDZG300	SENTELIC, TPA2D2IC99

ITEM	MODE 3 LCD+CRT 1366*768/60Hz	MODE 4 LCD+CRT 1366*768/60Hz
CPU	INTEL, P8400, 2.26GHz	INTEL, P8400, 2.26GHz
Panel	CMO, N156B3-L01, 15.6"	SAMSUNG, LTN160AT01-A01, 16"
H.D.D	WD, WD2500BEVT	WD, WD2500BEVT
ODD	HLDS, GT10N	TSST, TS-L633
DRAM	TRANSCEND, JM800QSU-1G	A-DATA, HYOVF1A0834Z
Wireless LAN	ATHEROS, AR5B95 (AW-NE785H)	Ralink , RT3090(MS-6891)
CCD	AZUREWAVE, AM-1C017	BISON, BN29M6S8-010
Battery Pack	CELXPART, BTY-L74	CELXPART, BTY-L74
AC Adapter	DELTA, ADP-65HB BB	LI SHIN, 0335A1965
MODEM	MOTOROMA, ML3054	AGERE, MA560-7
BT	MSI, MS-6837D	MSI, MS-6837D
INVERTER	MITAC, DA-1A08-MS02L	SUMIDA, TWS-400-9652
TOUCH PAD	SYNAPTICS, TM61PDZG300	SENTELIC, TPA2D2IC99

ITEM	MODE 5 LCD+CRT 1366*768/60Hz	MODE 6 LCD+CRT 1366*768/60Hz
CPU	INTEL, P7350, 2.0GHz	INTEL, P7350, 2.0GHz
Panel	SAMSUNG, LTN160AT01-A04, 16"	CHIMEI, N156B3-L02, 15.6"
H.D.D	WD, WD1600BEVT	WD, WD1600BEVT
ODD	PLDS, DS-8A2S	SONY, AD-7580S
DRAM	SAMSUNG, M470T2864QZ3-CF7	HYNIX, HYMP112S64CP6-S6
Wireless LAN	ATHEROS, AR5B95 (AW-NE785H)	Ralink , RT3090(MS-6891)
CCD	AZUREWAVE, AM-1C017	BISON, BN29M6S8-010
Battery Pack	CELXPART, BTY-L74	CELXPART, BTY-L74
AC Adapter	DELTA, ADP-65HB BB	LI SHIN, 0335A1965
MODEM	MOTOROMA, ML3054	AGERE, MA560-7
BT	MSI, MS-6837D	MSI, MS-6837D
INVERTER	SAMPO, YIVNMS0018D11-B	MITAC, DA-1A08-MS02L
TOUCH PAD	SYNAPTICS, TM61PDZG300	SENTELIC, TPA2D2IC99

ITEM	MODE 7 LCD+CRT 1366*768/60Hz	MODE 8 LCD+CRT 1366*768/60Hz
CPU	INTEL, T5900, 2.2GHz	INTEL, T5900, 2.2GHz
Panel	CMO, N156B3-L01, 15.6"	SAMSUNG, LTN160AT01-A01, 16"
H.D.D	FUJITSU, MHZ2160BH	FUJITSU, MHZ2160BH
ODD	SONY, AD-7560S	HLDS, GT10N
DRAM	ELPIDA, GU331G0ALEPR612F	TRANSCEND, JM800QSU-2G
Wireless LAN	ATHEROS, AR5B95 (AW-NE785H)	Ralink , RT3090(MS-6891)
CCD	AZUREWAVE, AM-1C017	BISON, BN29M6S8-010
Battery Pack	CELXPART, BTY-L74	CELXPART, BTY-L74
AC Adapter	DELTA, ADP-65HB BB	LI SHIN, 0335A1965
MODEM	MOTOROMA, ML3054	AGERE, MA560-7
BT	MSI, MS-6837D	MSI, MS-6837D
INVERTER	SUMIDA, TWS-400-9652	SAMPO, YIVNMS0018D11-B
TOUCH PAD	SYNAPTICS, TM61PDZG300	SENTELIC, TPA2D2IC99

ITEM	MODE 9 LCD+CRT 1366*768/60Hz	MODE 10 LCD+CRT 1366*768/60Hz
CPU	INTEL, T5800, 2.0GHz	INTEL, T5800, 2.0GHz
Panel	SAMSUNG, LTN160AT01-A04, 16"	CHIMEI, N156B3-L02, 15.6"
H.D.D	FUJITSU, MJA2250BH	FUJITSU, MJA2250BH
ODD	TSST, TS-L633	PLDS, DS-8A2S
DRAM	Champion, FOD2SXEMR-8G1	A-DATA, HYOVF1B163BZ
Wireless LAN	ATHEROS, AR5B95 (AW-NE785H)	Ralink , RT3090(MS-6891)
CCD	AZUREWAVE, AM-1C017	BISON, BN29M6S8-010
Battery Pack	CELXPART, BTY-L74	CELXPART, BTY-L74
AC Adapter	DELTA, ADP-65HB BB	LI SHIN, 0335A1965
MODEM	MOTOROMA, ML3054	AGERE, MA560-7
BT	MSI, MS-6837D	MSI, MS-6837D
INVERTER	MITAC, DA-1A08-MS02L	SUMIDA, TWS-400-9652
TOUCH PAD	SYNAPTICS, TM61PDZG300	SENTELIC, TPA2D2IC99

ITEM	MODE 11 LCD+CRT 1366*768/60Hz	MODE 12 LCD+CRT 1366*768/60Hz
CPU	INTEL, T3400, 2.16GHz	INTEL, T3200, 2.0GHz
Panel	CMO, N156B3-L01, 15.6"	SAMSUNG, LTN160AT01-A01, 16"
H.D.D	FUJITSU, MJA2320BH	FUJITSU, MHZ2250BH
ODD	SONY, AD-7580S	SONY, AD-7560S
DRAM	ELPIDA, GU332G0ALEPR8H2F	SAMSUNG, M470T5663QZ3-CF7
Wireless LAN	ATHEROS, AR5B95 (AW-NE785H)	Ralink, RT3090(MS-6891)
CCD	AZUREWAVE, AM-1C017	BISON, BN29M6S8-010
Battery Pack	CELXPRT, BTY-L74	CELXPRT, BTY-L74
AC Adapter	DELTA, ADP-65HB BB	LI SHIN, 0335A1965
MODEM	MOTOROMA, ML3054	AGERE, MA560-7
BT	MSI, MS-6837D	MSI, MS-6837D
INVERTER	SAMPO, YIVNMS0018D11-B	MITAC, DA-1A08-MS02L
TOUCH PAD	SYNAPTICS, TM61PDZG300	SENTELIC, TPA2D2IC99

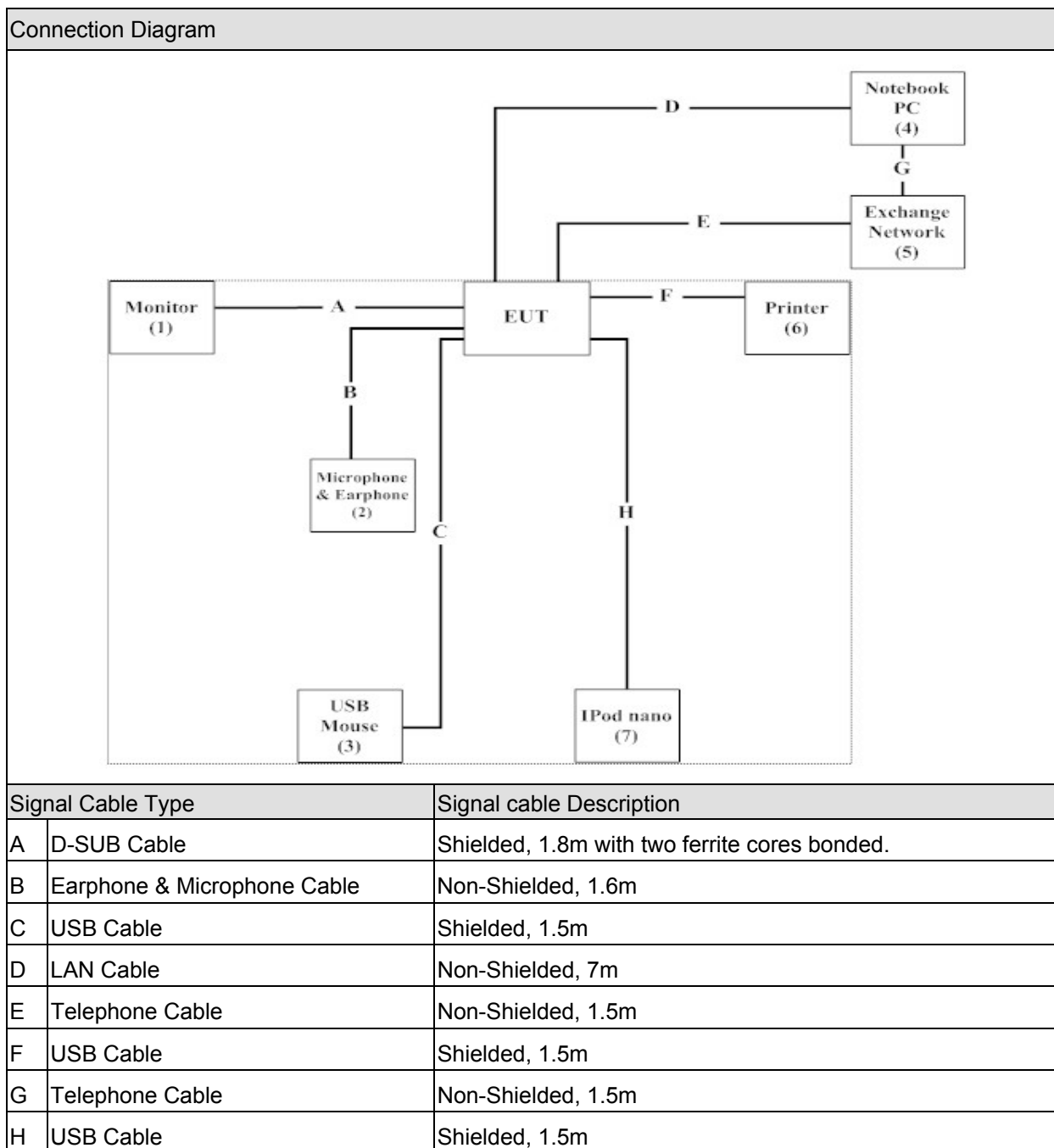
ITEM	MODE 13 LCD+CRT 1366*768/60Hz
CPU	INTEL, T3410, 2.16GHz
Panel	SAMSUNG, LTN160AT01-A04, 16"
H.D.D	FUJITSU, MHZ2320BH
ODD	HLDS, GT10N
DRAM	HYNIX, HYMP125S64CP8-S6
Wireless LAN	ATHEROS, AR5B95 (AW-NE785H)
CCD	AZUREWAVE, AM-1C017
Battery Pack	CELXPRT, BTY-L74
AC Adapter	DELTA, ADP-65HB BB
MODEM	MOTOROMA, ML3054
BT	MSI, MS-6837D
INVERTER	SUMIDA, TWS-400-9652
TOUCH PAD	SYNAPTICS, TM61PDZG300

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Monitor	Dell	2407WFPb	CN-0FC255-46633-6 38-1MDS	Non-Shielded, 0.8m
2	Microphone & Earphone	PCHOME	N/A	N/A	N/A
3	USB Mouse	Logitech	M-BE58	HCA24311471	N/A
4	Notebook PC	DELL	PP04X	2D2ZM1S	Non-Shielded, 0.8m
5	Exchange Network	Sun Moon Star	PX-4	95170087	Non-Shielded, 1.8m
6	Printer	EPSON	StyLus C63	FAPY094246	Non-Shielded, 1.8m
7	iPod nano	Apple	A1199	YM709RBUVQ5	N/A

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1	Setup the EUT and peripheral as shown on Figure
2	Connect the power to EUT and peripherals, then turn on the power of all equipments.
3	Waiting for EUT to enter Window Windows Vista Operating System, and adjust the display resolution to the test mode.first.
4	Connect LAN and Telecom to Notebook PC for transmitting data.
5	Activate Wireless interface and Bluetooth function, and perform the wireless data communication with the other Notebook (write/delete action).
6	Run Windows Media Player program and play a disk with color Bar pattern
7	Run “H” pattern.
8	Begin to test and repeat the above procedure (4)~(7)

2. Technical Test

2.1. Summary of Test Result

- ☒ No deviations from the test standards
- ☐ Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Conducted Emission	EN 55022:2006 Class B	Yes	No
Impedance Stabilization Network	EN 55022:2006 Class B	Yes	No
Radiated Emission	EN 55022:2006 Class B	Yes	No
Power Harmonics	EN 61000-3-2:2006	Yes	No
Voltage Fluctuation and Flicker	EN 61000-3-3:1995+A1: 2001+A2: 2005	Yes	No

Immunity			
Performed Item	Normative References	Test Performed	Deviation
Electrostatic Discharge	IEC 61000-4-2 Edition 1.2: 2001-04	Yes	No
Radiated susceptibility	IEC 61000-4-3 Edition 3.0: 2006	Yes	No
Electrical fast transient/burst	IEC 61000-4-4:2004	Yes	No
Surge	IEC 61000-4-5 Edition 2.0: 2005	Yes	No
Conducted susceptibility	IEC 61000-4-6 Edition 2.2: 2006	Yes	No
Power frequency magnetic field	IEC 61000-4-8 Edition 1.1: 2001-03	Yes	No
Voltage dips and interruption	IEC 61000-4-11 2nd Edition: 2004-03	Yes	No

2.2. List of Test Equipment

Conducted Emission / SR1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCS 30	100366	2008/10/18
LISN	R&S	ENV4200	833209/007	2008/08/12
LISN	R&S	ENV216	100085	2009/02/14
Pulse Limiter	R&S	ESH3-Z2	357.88.10.52	2008/09/04

Impedance Stabilization Network / SR1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Capacitive Voltage Probe	Schaffner	CVP2200A	18331	2008/11/10
EMI Test Receiver	R&S	ESCS 30	100366	2008/10/18
LISN	R&S	ENV216	100085	2009/02/14
LISN	R&S	ENV4200	833209/007	2008/07/13
Impedance Stabilization Network	Schaffner	ISN T400	19099	2008/07/15
Pulse Limiter	R&S	ESH3-Z2	357.88.10.52	2008/09/04
RF Current Probe	FCC	F-65 10KHz~1GHz	198	2008/11/10
BALANCED TELECOM ISN	FCC	FCC-TLISN-T2-02	20316	2008/11/24
BALANCED TELECOM ISN	FCC	FCC-TLISN-T4-02	20317	2008/11/24
BALANCED TELECOM ISN	FCC	FCC-TLISN-T8-02	20319	2008/11/24

Radiated Emission / Site1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2918	2008/09/25
Broadband Horn Antenna	Schwarzbeck	BBHA9170	208	2008/07/25
EMI Test Receiver	R&S	ESCS 30	100122	2009/02/03
Horn Antenna	Schwarzbeck	BBHA9120D	305	2008/08/10
Pre-Amplifier	QTK	N/A	N/A	2009/01/03
Spectrum Analyzer	Advantest	R3162	100803470	2008/11/10

Power Harmonics / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
AC Power Source(Harmonic)	Schaffner	NSG 1007	HK54148	2008/06/23
IEC1000-4-X Analyzer(Flicker)	Schaffner	CCN 1000-1	X7 1887	2008/06/23

Voltage Fluctuation and Flicker / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
AC Power Source(Harmonic)	Schaffner	NSG 1007	HK54148	2008/06/23
IEC1000-4-X Analyzer(Flicker)	Schaffner	CCN 1000-1	X7 1887	2008/06/23

Electrostatic Discharge / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
ESD simulator system	TESEQ	NSG 438	695	2009/01/17
Horizontal Coupling Plane(HCP)	Quietek	HCP AL50	N/A	N/A
Vertical Coupling Plane(VCP)	Quietek	VCP AL50	N/A	N/A

Radiated susceptibility / CB5

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
AF-BOX	R&S	AF-BOX ACCUST	100007	N/A
Audio Analyzer	R&S	UPL 16	100137	2008/04/23
Bilog Antenna	Schaffner Chase	CBL6112B	2450	2009/01/03
Broad-Band Antenna	Schwarzbeck	VULB 9166	1085	2008/08/02
Biconilog Antenna	EMCO	3149	00071675	2008/05/29
CMU200 UNIV.RADIOCOMM	R&S	CMU200	104846	2008/04/23
Directional Coupler	A&R	DC 6180	22735	N/A
Dual Microphone Supply	B&K	5935	2426784	2008/08/04
Mouth Simulator	B&K	4227	2439692	2008/08/04
Power Amplifier	A&R	30S1G3	309453	N/A
Power Amplifier	A&R	100W10000M7	A285000010	N/A
Power Amplifier	SCHAFFNER	CBA9413B	4020	N/A
Power Amplifier	AR	75A250A	0325371	N/A
Power Meter	R&S	NRVD(P.M)	100219	2008/04/22
Pre-Amplifier	A&R	150A220	23067	N/A
Probe Microphone	B&K	4182	2278070	2008/08/04
Signal Generator	R&S	SMY02(9K-2080)	825454/028	2008/09/22

Electrical fast transient/burst / SR2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Schaffner NSG 2050 System Mainframe	Schaffner	N/A	N/A	2008/12/28

Surge / SR2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Schaffner NSG 2050 System Mainframe	Schaffner	N/A	N/A	2008/12/28

Conducted susceptibility / SR6

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Schaffner NSG 2070 RF-Generator	Schaffner	N/A	N/A	2008/04/21

Power frequency magnetic field / SR3

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Induction Coil Interface	Schaffner	INA 2141	6002	N/A
Magnetic Loop Coil	Schaffner	INA 702	160	N/A
Triaxial ELF Magnetic Field Meter	F.B.BELL	4090	9852	2008/05/30

Voltage dips and interruption / SR2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Schaffner NSG 2050 System Mainframe	Schaffner	N/A	N/A	2008/12/28

Schaffner NSG 2050 System Mainframe				
Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Burst 4.8KV/16A Generator with CDN	Schaffner	PNW2225	200123-098SC	2008/12/28
Damped osc. Wave 100kHz and 1MHz	Schaffner	PNW2056	200124-058SC	2008/12/28
Double AC Source Variator	Schaffner	NSG 642A	30910014938	2008/12/28
Hybrid surge pulse 1.2/50uS	Schaffner	PNW 2050	20532-514LU	2008/12/28
PQT Generator	Schaffner	PNW2003	200138-007SC	2009/01/02
Pulse COUPLING NETWORK	Schaffner	CDN131	200124-007SC	2008/12/28

Schaffner NSG 2070 RF-Generator				
Instrument	Manufacturer	Type No.	Serial No	Cal. Date
CDN	Schaffner	CAL U100A	20405	2008/04/21
CDN	Schaffner	TRA U150	20454	2008/04/21
CDN M016S	Schaffner	CAL U100A	20410	2008/04/21
CDN M016S	Schaffner	TRA U150	21167	2008/04/21
CDN T002	Schaffner	CAL U100	20491	2008/04/21
CDN T002	Schaffner	TRA U150	21169	2008/04/21
CDN T400	Schaffner	CAL U100	17735	2008/04/21
CDN T400	Schaffner	TRA U150	21166	2008/04/21
Coupling Decoupling Network	Schaffner	CDN M016S	20822	2009/02/23
Coupling Decoupling Network	Schaffner	CDN M016S	20823	2008/04/21
Coupling Decoupling Network	Schaffner	CDN T002	19018	2008/04/21
Coupling Decoupling Network	Schaffner	CDN T400	21226	2008/04/21
EM-CLAMP	Schaffner	KEMZ 801	21024	2008/04/21

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Impedance Stabilization Network

The measurement uncertainty is evaluated as ± 2.26 dB.

Radiated Emission

The measurement uncertainty is evaluated as ± 3.19 dB.

Electrostatic Discharge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in ESD testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant ESD standards. The immunity test signal from the ESD system meet the required specifications in IEC 61000-4-2 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63 % and 2.76%.

Radiated susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in RS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant RS standards. The immunity test signal from the RS system meet the required specifications in IEC 61000-4-3 through the calibration for the uniform field strength and monitoring for the test level with the uncertainty evaluation report for the electrical field strength as being 2.72 Db.

Electrical fast transient/burst

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in EFT/Burst testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant EFT/Burst standards. The immunity test signal from the EFT/Burst system meet the required specifications in IEC 61000-4-4 through the calibration report with the calibrated uncertainty for the waveform of voltage, frequency and timing as being 1.63 %, 2.8 10-10 and 2.76%.

Surge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in Surge testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant Surge standards. The immunity test signal from the Surge system meet the required specifications in IEC 61000-4-5 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63 % and 2.76%.

Conducted susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in CS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant CS standards. The immunity test signal from the CS system meet the required specifications in IEC 61000-4-6 through the calibration for unmodulated signal and monitoring for the test level with the uncertainty evaluation report for the injected modulated signal level through CDN and EM Clamp/Direct Injection as being 3.72 dB and 2.78 dB.

Power frequency magnetic field

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in PFM testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant PFM standards. The immunity test signal from the PFM system meet the required specifications in IEC 61000-4-8 through the calibration report with the calibrated uncertainty for the Gauss Meter to verify the output level of magnetic field strength as being 2 %.

Voltage dips and interruption

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in DIP testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant DIP standards. The immunity test signal from the DIP system meet the required specifications in IEC 61000-4-11 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63 % and 2.76%.

2.4. Test Environment

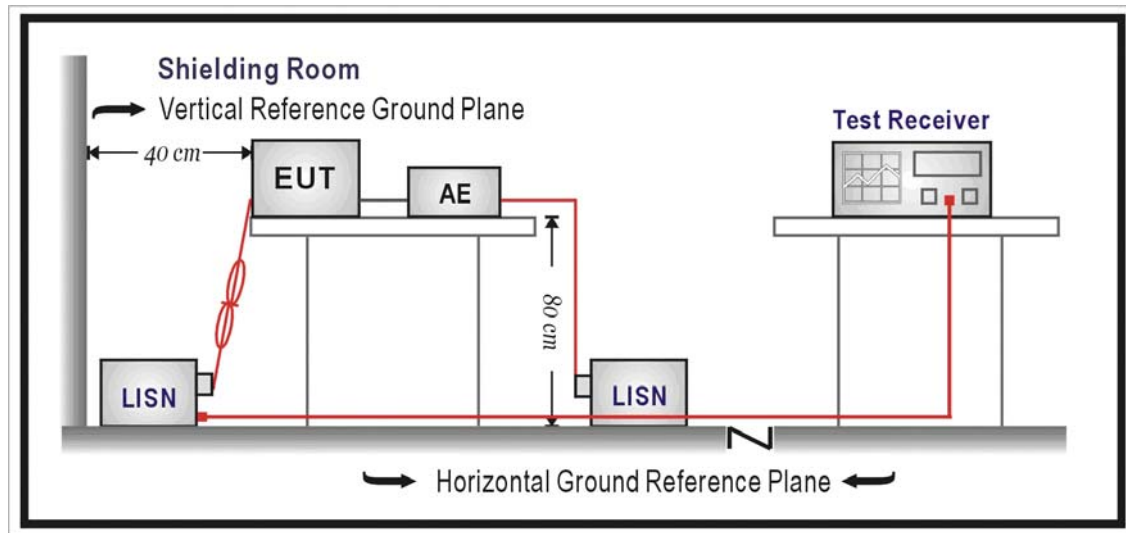
Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Impedance Stabilization Network	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Radiated Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Electrostatic Discharge	Temperature (°C)	15-35	21
	Humidity (%RH)	30-60	51
	Barometric pressure (mbar)	860-1060	950-1000
Radiated susceptibility	Temperature (°C)	15-35	21
	Humidity (%RH)	25-75	51
	Barometric pressure (mbar)	860-1060	950-1000
Electrical fast transient/burst	Temperature (°C)	15-35	21
	Humidity (%RH)	25-75	51
	Barometric pressure (mbar)	860-1060	950-1000
Surge	Temperature (°C)	15-35	21
	Humidity (%RH)	10-75	51
	Barometric pressure (mbar)	860-1060	950-1000
Conducted susceptibility	Temperature (°C)	15-35	21
	Humidity (%RH)	25-75	51
	Barometric pressure (mbar)	860-1060	950-1000
Power frequency magnetic field	Temperature (°C)	15-35	21
	Humidity (%RH)	25-75	51
	Barometric pressure (mbar)	860-1060	950-1000
Voltage dips and interruption	Temperature (°C)	15-35	21
	Humidity (%RH)	25-75	51
	Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission (Main Terminals)

3.1. Test Specification

According to EMC Standard : EN 55022

3.2. Test Setup



3.3. Limit

Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

3.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

(Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.

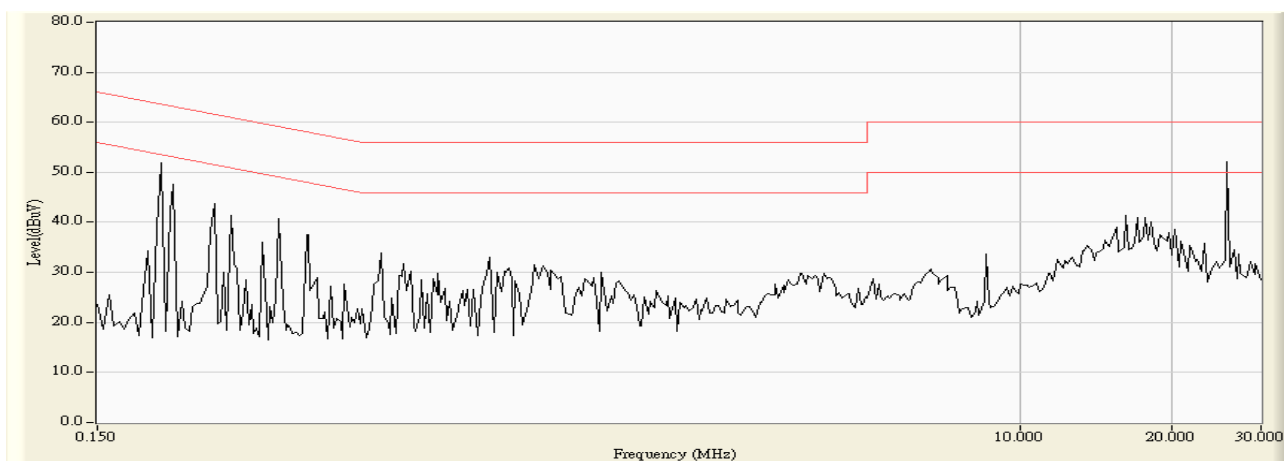
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Deviation from Test Standard

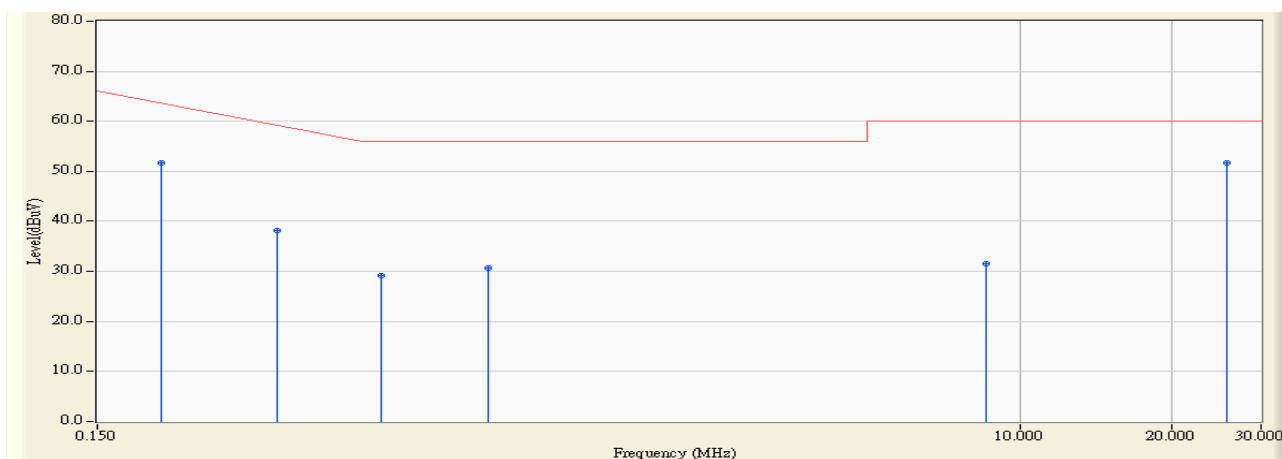
No deviation.

3.6. Test Result

Site : SR-1	Time : 2009/03/31 - 23:20
Limit : CISPR_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ENV-216-L1 - Line1
Power : AC 230V/50Hz	Note : Mode 1



Site : SR-1	Time : 2009/03/31 - 23:21
Limit : CISPR_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ENV-216-L1 - Line1
Power : AC 230V/50Hz	Note : Mode 1

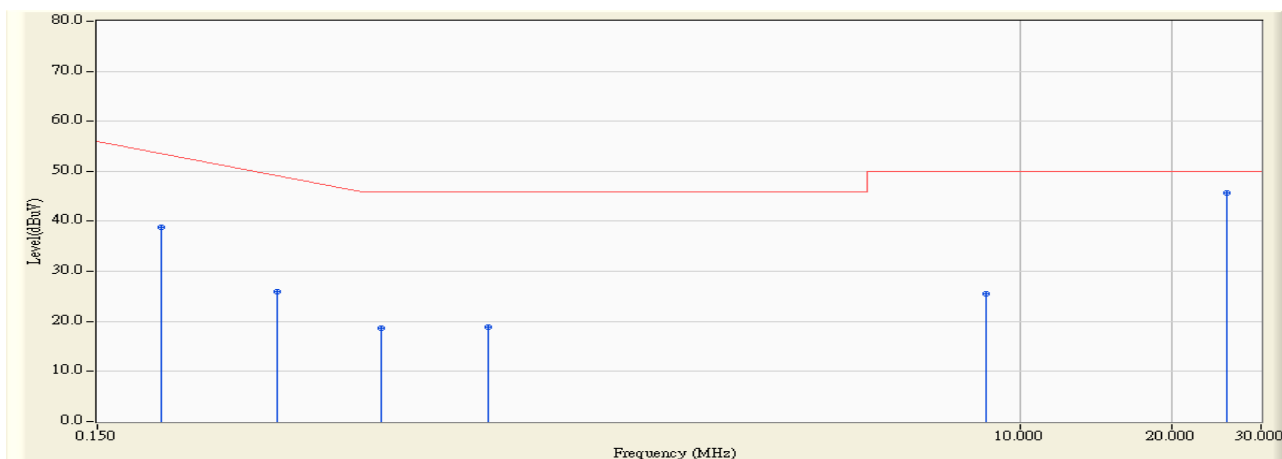


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.201	9.824	41.790	51.614	-12.929	64.543	QUASIPeAK
2		0.341	9.829	28.250	38.079	-22.464	60.543	QUASIPeAK
3		0.545	9.820	19.310	29.130	-26.870	56.000	QUASIPeAK
4		0.892	9.830	20.780	30.610	-25.390	56.000	QUASIPeAK
5		8.576	9.910	21.670	31.580	-28.420	60.000	QUASIPeAK
6	*	25.732	10.240	41.410	51.650	-8.350	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/03/31 - 23:21
Limit : CISPR_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ENV-216-L1 - Line1
Power : AC 230V/50Hz	Note : Mode 1

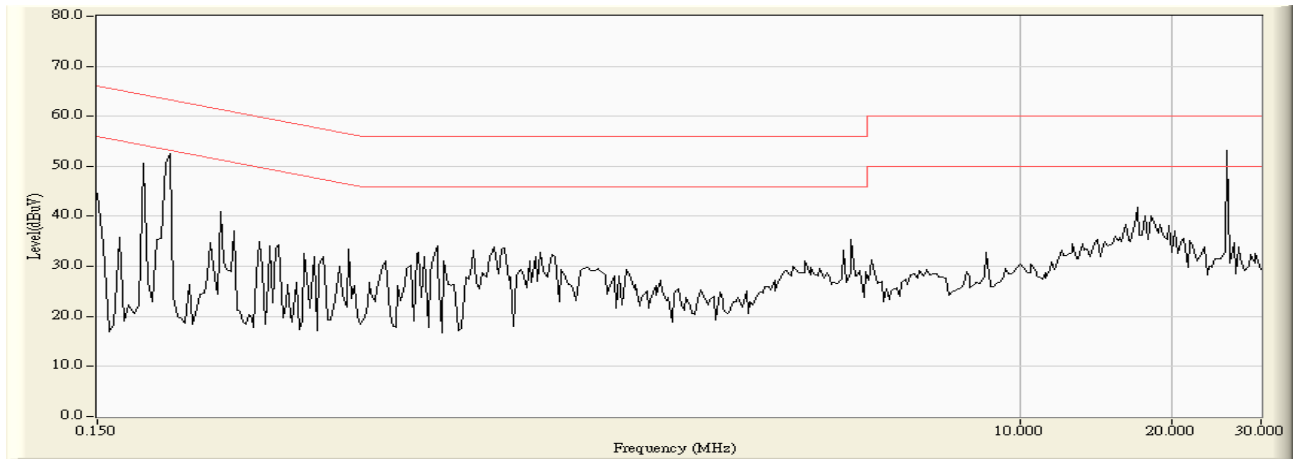


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.201	9.824	28.920	38.744	-15.799	54.543	AVERAGE
2		0.341	9.829	16.140	25.969	-24.574	50.543	AVERAGE
3		0.545	9.820	8.860	18.680	-27.320	46.000	AVERAGE
4		0.892	9.830	9.100	18.930	-27.070	46.000	AVERAGE
5		8.576	9.910	15.650	25.560	-24.440	50.000	AVERAGE
6	*	25.732	10.240	35.540	45.780	-4.220	50.000	AVERAGE

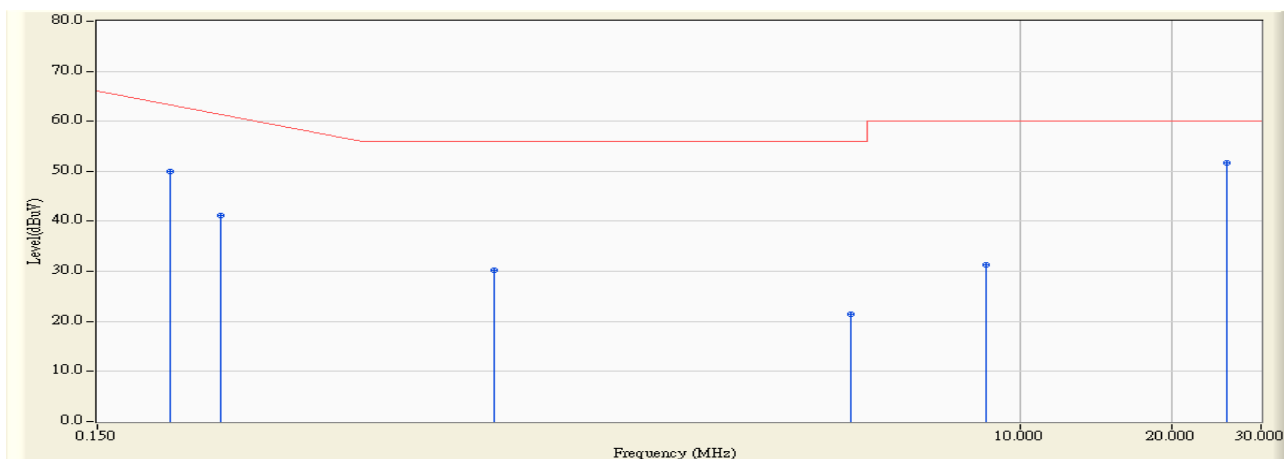
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/03/31 - 23:22
Limit : CISPR_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ENV-216-N - Line2
Power : AC 230V/50Hz	Note : Mode 1



Site : SR-1	Time : 2009/03/31 - 23:23
Limit : CISPR_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ENV-216-N - Line2
Power : AC 230V/50Hz	Note : Mode 1

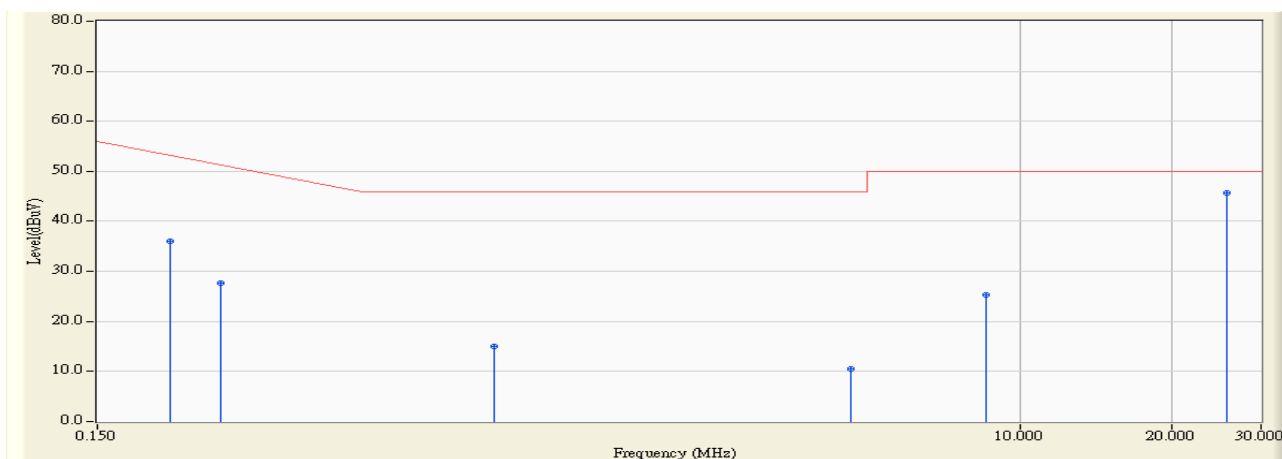


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.209	9.860	40.150	50.010	-14.304	64.314	QUASIPeAK
2		0.263	9.855	31.220	41.075	-21.696	62.771	QUASIPeAK
3		0.916	9.830	20.440	30.270	-25.730	56.000	QUASIPeAK
4		4.642	9.870	11.670	21.540	-34.460	56.000	QUASIPeAK
5		8.576	9.920	21.350	31.270	-28.730	60.000	QUASIPeAK
6	*	25.732	10.290	41.340	51.630	-8.370	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/03/31 - 23:23
Limit : CISPR_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ENV-216-N - Line2
Power : AC 230V/50Hz	Note : Mode 1

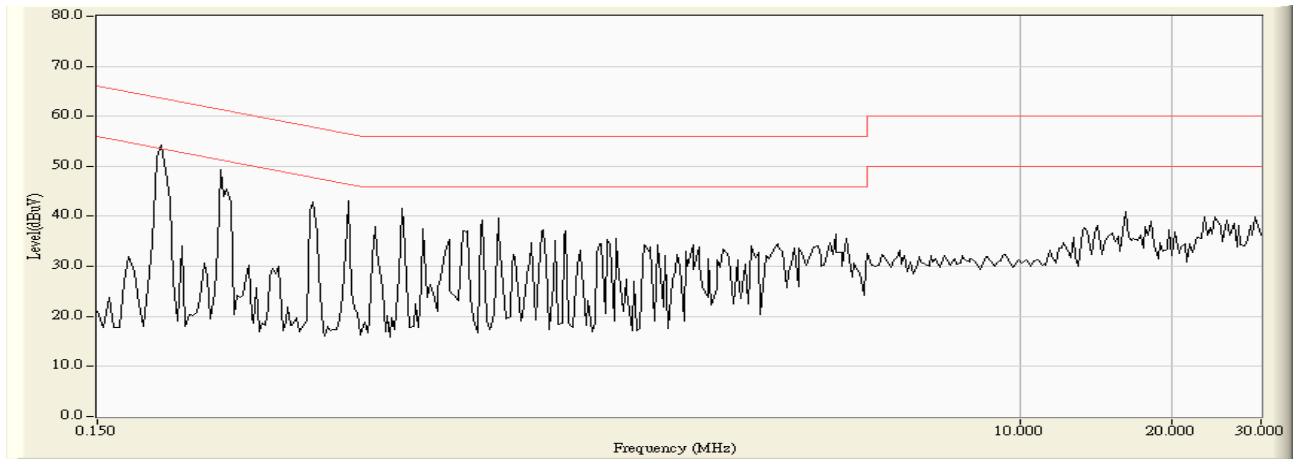


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.209	9.860	26.180	36.040	-18.274	54.314	AVERAGE
2		0.263	9.855	17.830	27.685	-25.086	52.771	AVERAGE
3		0.916	9.830	5.150	14.980	-31.020	46.000	AVERAGE
4		4.642	9.870	0.700	10.570	-35.430	46.000	AVERAGE
5		8.576	9.920	15.410	25.330	-24.670	50.000	AVERAGE
6	*	25.732	10.290	35.450	45.740	-4.260	50.000	AVERAGE

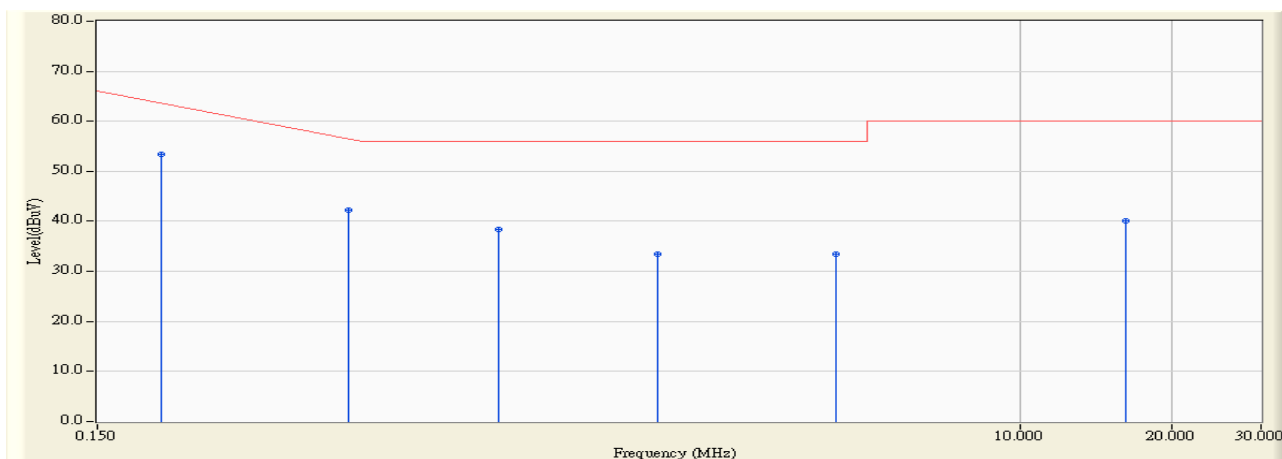
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:40
Limit : CISPR_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ENV-216-L1 - Line1
Power : AC 230V/50Hz	Note : Mode 2



Site : SR-1	Time : 2009/04/01 - 00:41
Limit : CISPR_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ENV-216-L1 - Line1
Power : AC 230V/50Hz	Note : Mode 2

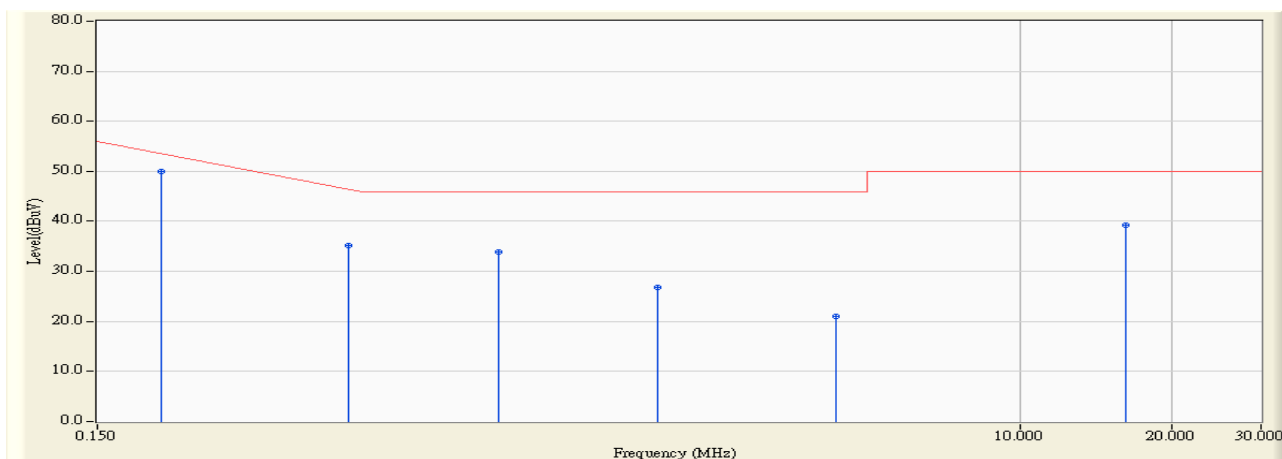


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.201	9.824	43.600	53.424	-11.119	64.543	QUASIPeAK
2		0.470	9.820	32.330	42.150	-14.707	56.857	QUASIPeAK
3		0.931	9.830	28.640	38.470	-17.530	56.000	QUASIPeAK
4		1.927	9.850	23.570	33.420	-22.580	56.000	QUASIPeAK
5		4.334	9.870	23.670	33.540	-22.460	56.000	QUASIPeAK
6		16.228	10.190	29.920	40.110	-19.890	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:41
Limit : CISPR_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ENV-216-L1 - Line1
Power : AC 230V/50Hz	Note : Mode 2

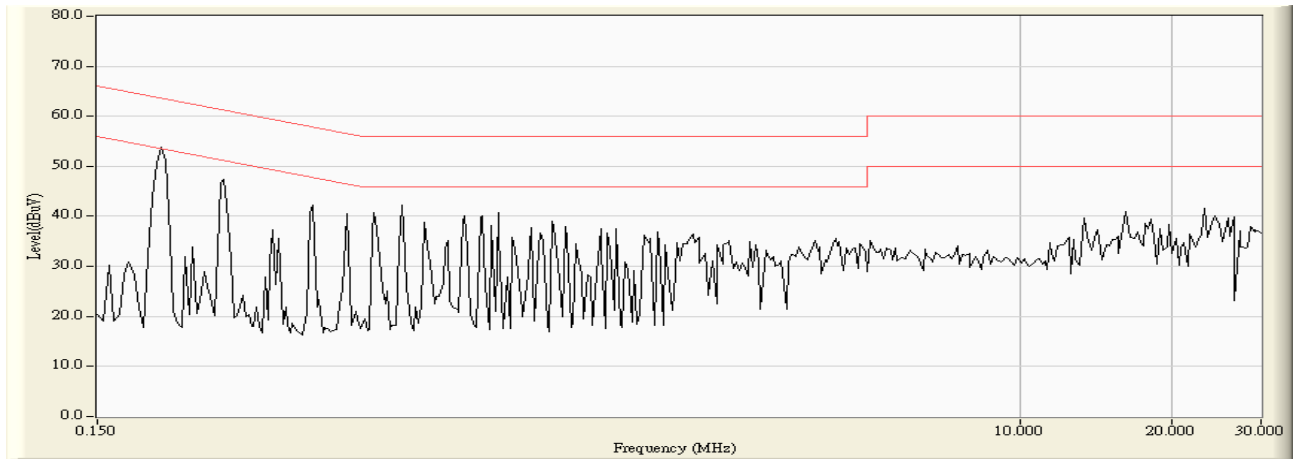


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.201	9.824	40.200	50.024	-4.519	54.543	AVERAGE
2		0.470	9.820	25.450	35.270	-11.587	46.857	AVERAGE
3		0.931	9.830	24.110	33.940	-12.060	46.000	AVERAGE
4		1.927	9.850	16.910	26.760	-19.240	46.000	AVERAGE
5		4.334	9.870	11.080	20.950	-25.050	46.000	AVERAGE
6		16.228	10.190	28.980	39.170	-10.830	50.000	AVERAGE

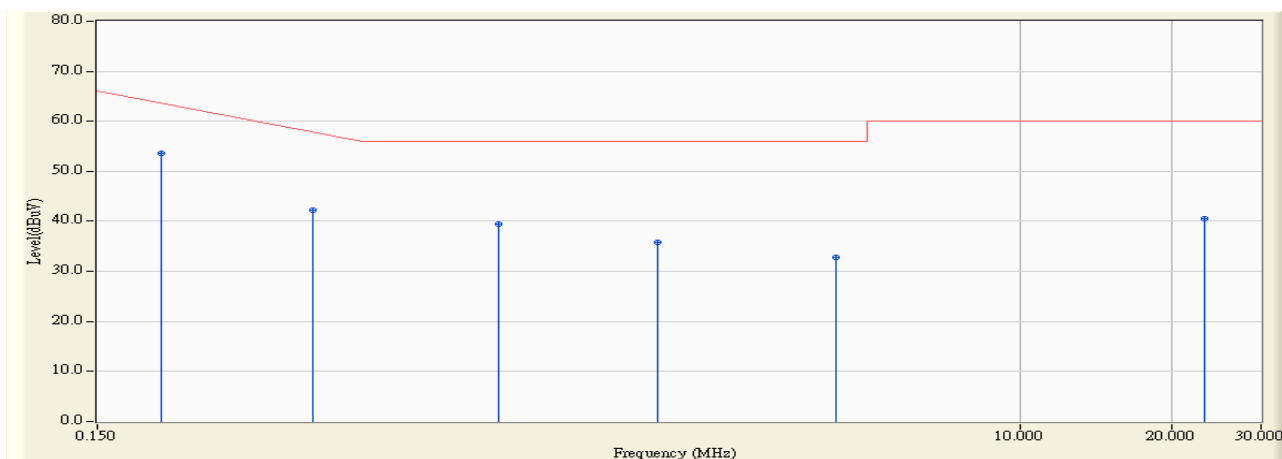
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:41
Limit : CISPR_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ENV-216-N - Line2
Power : AC 230V/50Hz	Note : Mode 2



Site : SR-1	Time : 2009/04/01 - 00:42
Limit : CISPR_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ENV-216-N - Line2
Power : AC 230V/50Hz	Note : Mode 2

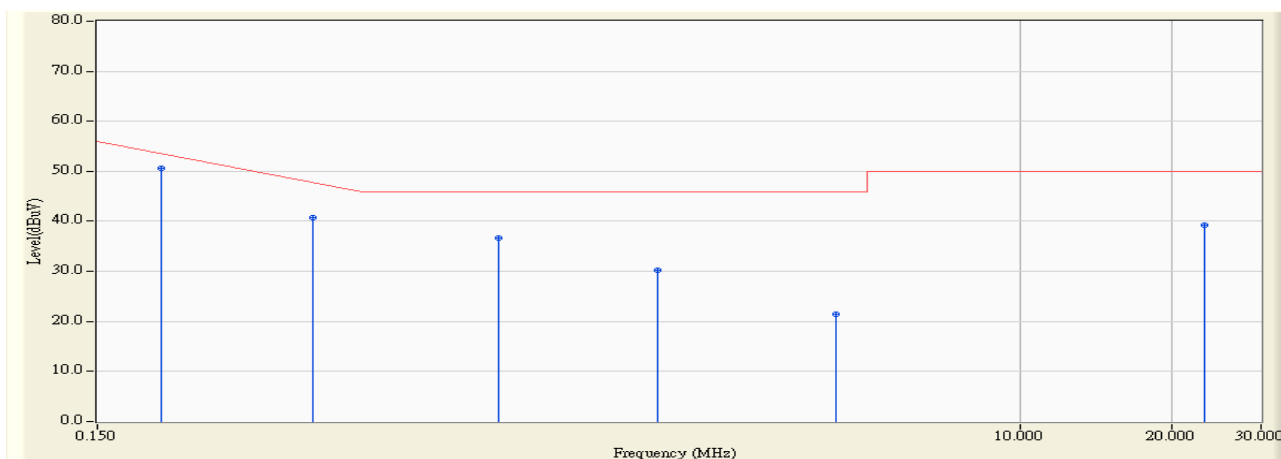


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.201	9.860	43.800	53.660	-10.883	64.543	QUASIPeAK
2		0.400	9.840	32.490	42.330	-16.527	58.857	QUASIPeAK
3		0.931	9.830	29.690	39.520	-16.480	56.000	QUASIPeAK
4		1.927	9.850	25.970	35.820	-20.180	56.000	QUASIPeAK
5		4.326	9.870	22.940	32.810	-23.190	56.000	QUASIPeAK
6		23.130	10.130	30.340	40.470	-19.530	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:42
Limit : CISPR_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ENV-216-N - Line2
Power : AC 230V/50Hz	Note : Mode 2



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.201	9.860	40.700	50.560	-3.983	54.543	AVERAGE
2		0.400	9.840	30.830	40.670	-8.187	48.857	AVERAGE
3		0.931	9.830	26.780	36.610	-9.390	46.000	AVERAGE
4		1.927	9.850	20.350	30.200	-15.800	46.000	AVERAGE
5		4.326	9.870	11.670	21.540	-24.460	46.000	AVERAGE
6		23.130	10.130	29.160	39.290	-10.710	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3.7. Test Photograph

Test Mode : Mode 1

Description : Front View of Conducted Test



Test Mode : Mode 1

Description : Back View of Conducted Test



Test Mode : Mode 2

Description : Front View of Conducted Test



Test Mode : Mode 2

Description : Back View of Conducted Test

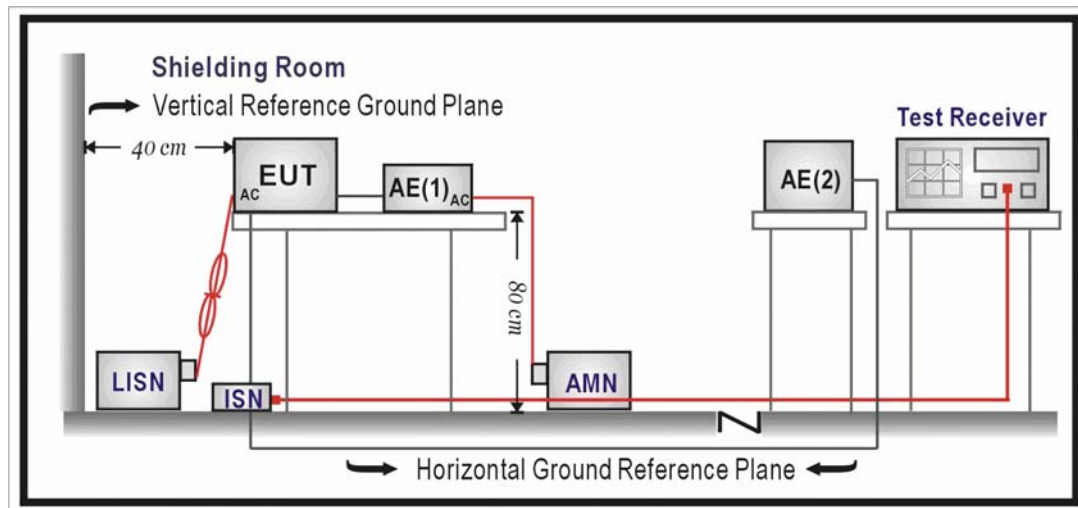


4. Conducted Emissions (Telecommunication Ports)

4.1. Test Specification

According to EMC Standard : EN 55022

4.2. Test Setup



4.3. Limit

Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	84 – 74	74 – 64
0.50 - 30	74	64

Remarks:

The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz.

4.4. Test Procedure

Telecommunication Port:

The mains voltage shall be supplied to the EUT via the LISN when the measurement of telecommunication port is performed. The common mode disturbances at the telecommunication port shall be connected to the ISN, which is 150 ohm impedance.

Both alternative cables are tested related to the LCL requested. The measurement range is from 150kHz to 30MHz. The bandwidth of measurement is set to 9kHz.

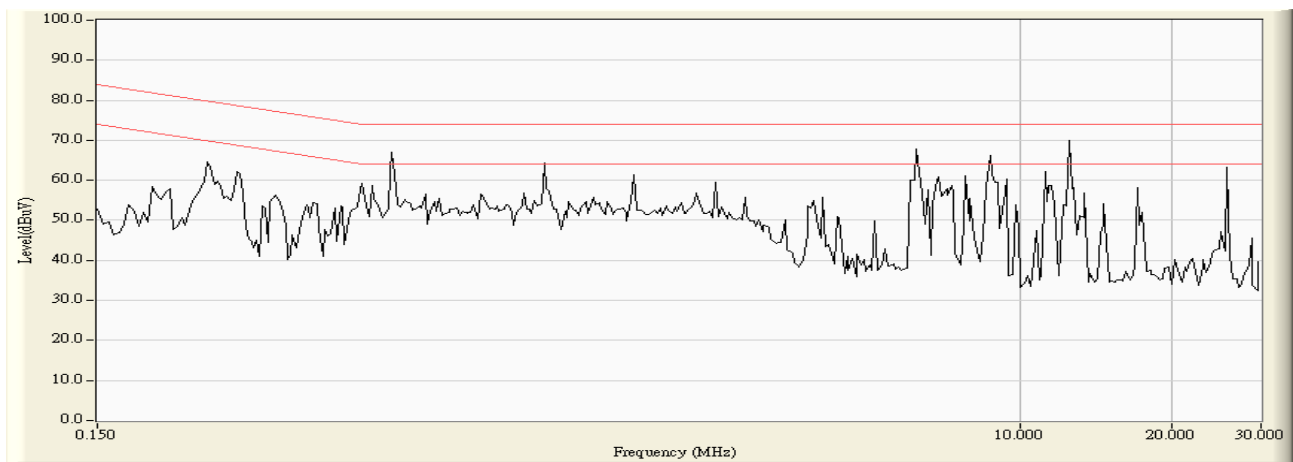
The 75dB LCL ISN is used for cat. 6 cable, the 65dB LCL ISN is used for cat. 5 cable, 55dB LCL ISN is used for cat. 3.

4.5. Deviation from Test Standard

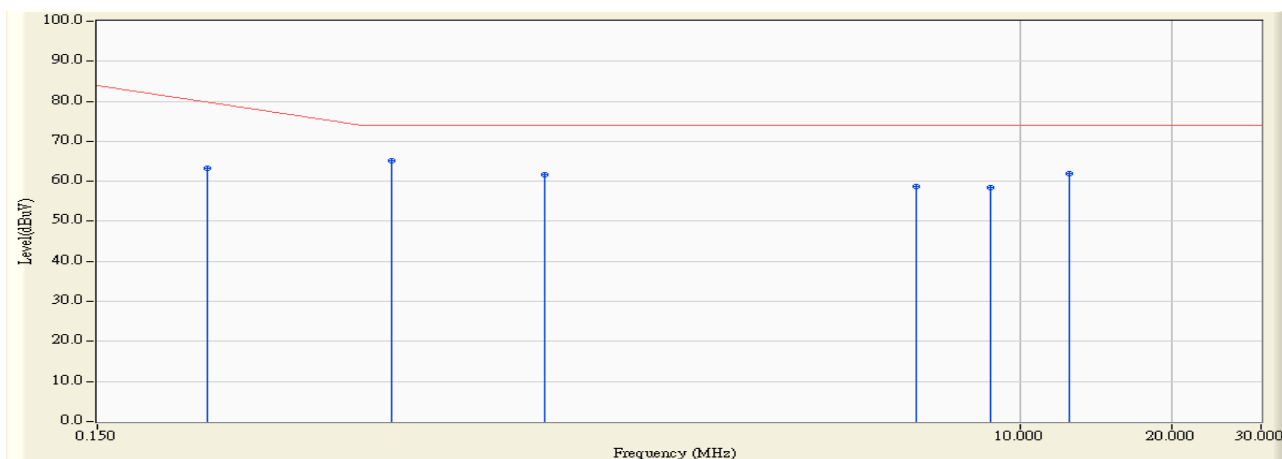
No deviation.

4.6. Test Result

Site : SR-1	Time : 2009/04/01 - 00:08
Limit : ISN_Voltage_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN 10Mbps



Site : SR-1	Time : 2009/04/01 - 00:12
Limit : ISN_Voltage_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN 10Mbps

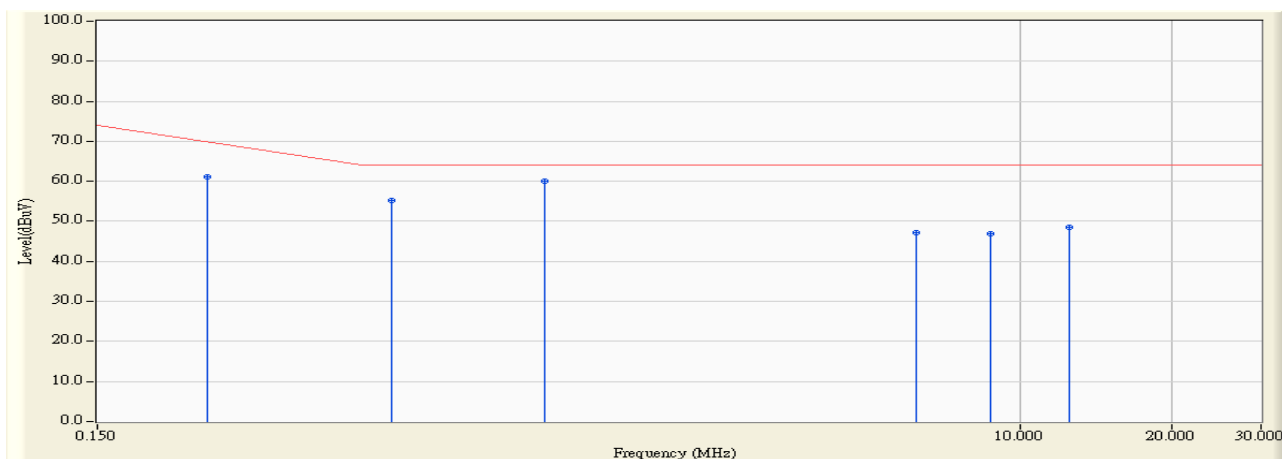


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.248	9.940	53.410	63.350	-17.850	81.200	QUASIPeAK
2	*	0.572	9.900	55.300	65.200	-8.800	74.000	QUASIPeAK
3		1.150	9.900	51.880	61.780	-12.220	74.000	QUASIPeAK
4		6.252	9.870	48.870	58.740	-15.260	74.000	QUASIPeAK
5		8.752	9.860	48.480	58.340	-15.660	74.000	QUASIPeAK
6		12.502	9.953	51.890	61.843	-12.157	74.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:12
Limit : ISN_Voltage_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN 10Mbps

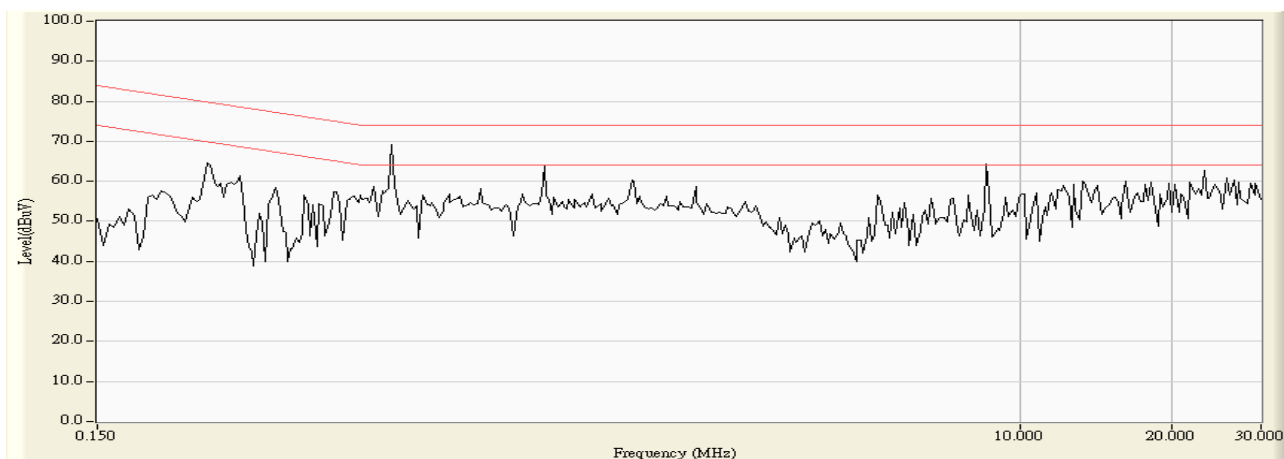


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.248	9.940	51.160	61.100	-10.100	71.200	AVERAGE
2		0.572	9.900	45.320	55.220	-8.780	64.000	AVERAGE
3	*	1.150	9.900	50.020	59.920	-4.080	64.000	AVERAGE
4		6.252	9.870	37.410	47.280	-16.720	64.000	AVERAGE
5		8.752	9.860	37.050	46.910	-17.090	64.000	AVERAGE
6		12.502	9.953	38.610	48.563	-15.437	64.000	AVERAGE

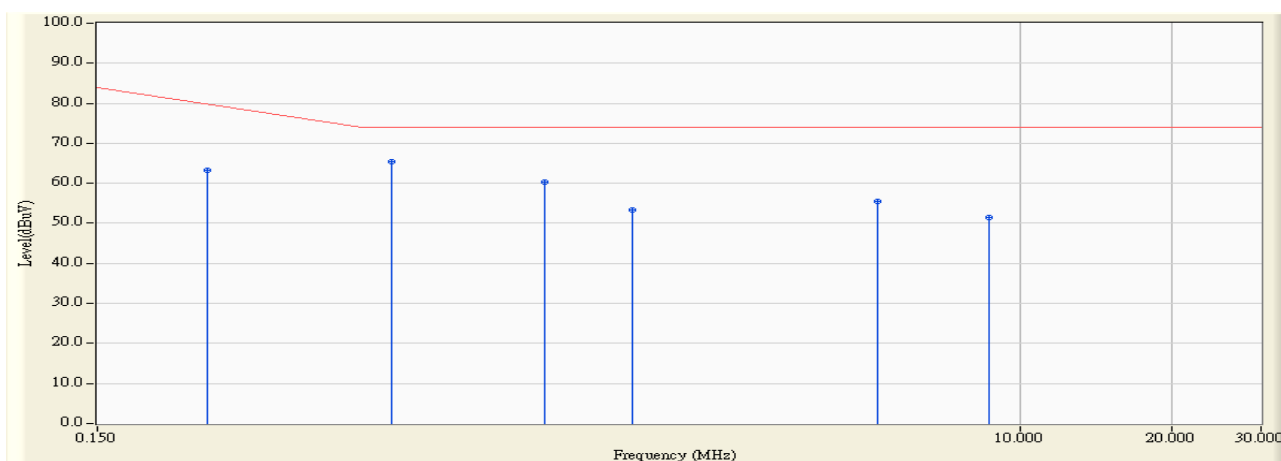
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/03/31 - 23:43
Limit : ISN_Voltage_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN 100Mbps



Site : SR-1	Time : 2009/03/31 - 23:46
Limit : ISN_Voltage_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN 100Mbps

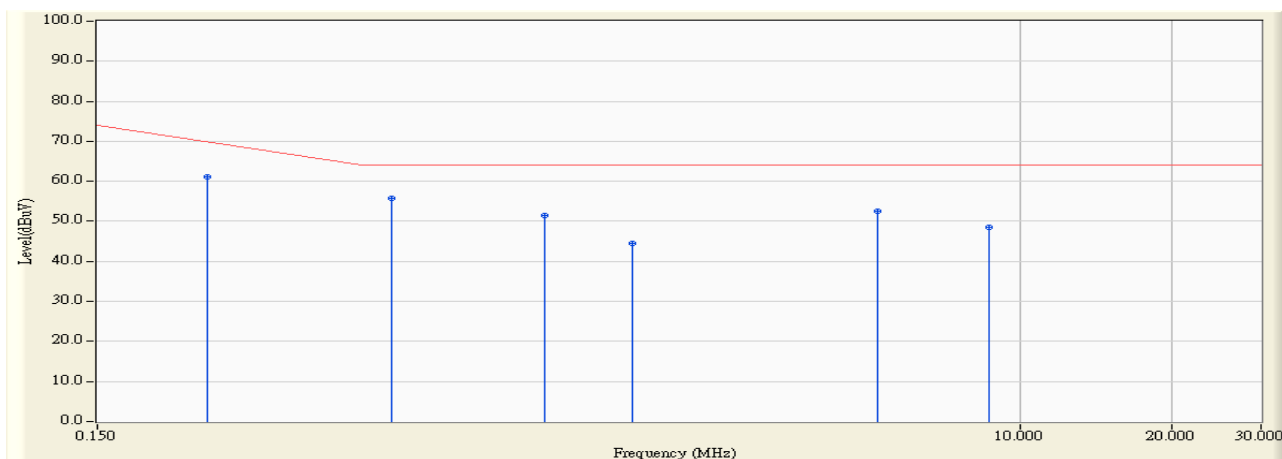


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV)	Margin (dB)	Limit (dBμV)	Detector Type
1		0.248	9.940	53.450	63.390	-17.810	81.200	QUASIPeAK
2	*	0.572	9.900	55.640	65.540	-8.460	74.000	QUASIPeAK
3		1.146	9.900	50.290	60.190	-13.810	74.000	QUASIPeAK
4		1.709	9.910	43.430	53.340	-20.660	74.000	QUASIPeAK
5		5.236	9.880	45.700	55.580	-18.420	74.000	QUASIPeAK
6		8.713	9.860	41.650	51.510	-22.490	74.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/03/31 - 23:46
Limit : ISN_Voltage_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN 100Mbps

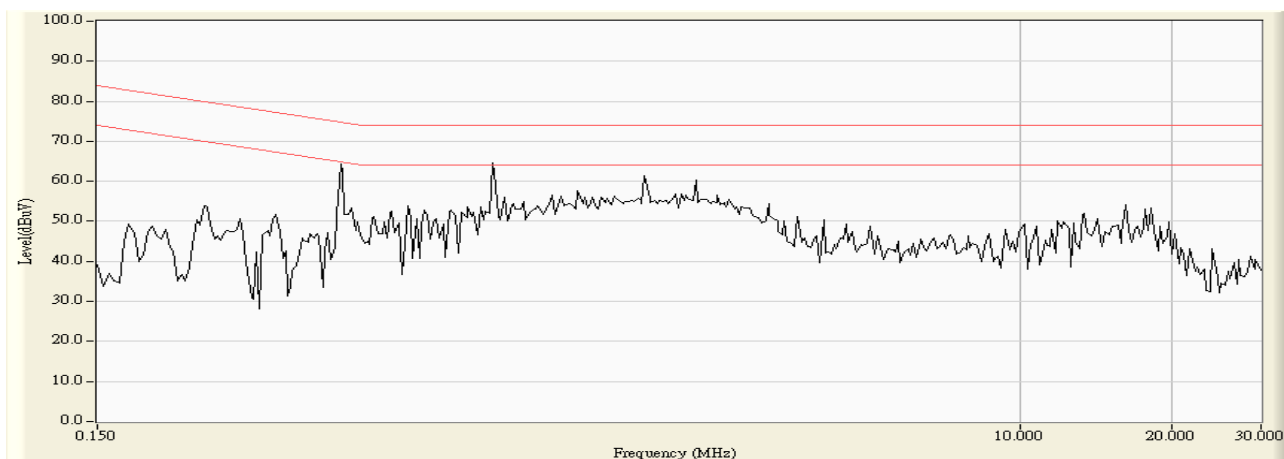


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.248	9.940	51.290	61.230	-9.970	71.200	AVERAGE
2	*	0.572	9.900	45.790	55.690	-8.310	64.000	AVERAGE
3		1.146	9.900	41.630	51.530	-12.470	64.000	AVERAGE
4		1.709	9.910	34.720	44.630	-19.370	64.000	AVERAGE
5		5.236	9.880	42.570	52.450	-11.550	64.000	AVERAGE
6		8.713	9.860	38.730	48.590	-15.410	64.000	AVERAGE

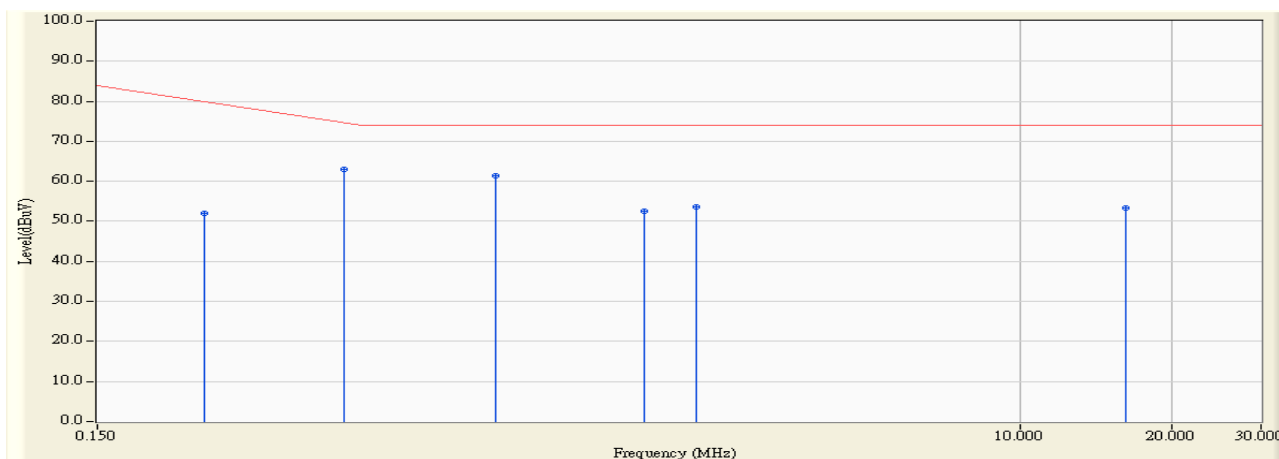
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:04
Limit : ISN_Voltage_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ISN-T2 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN Telecom



Site : SR-1	Time : 2009/04/01 - 00:05
Limit : ISN_Voltage_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ISN-T2 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN Telecom

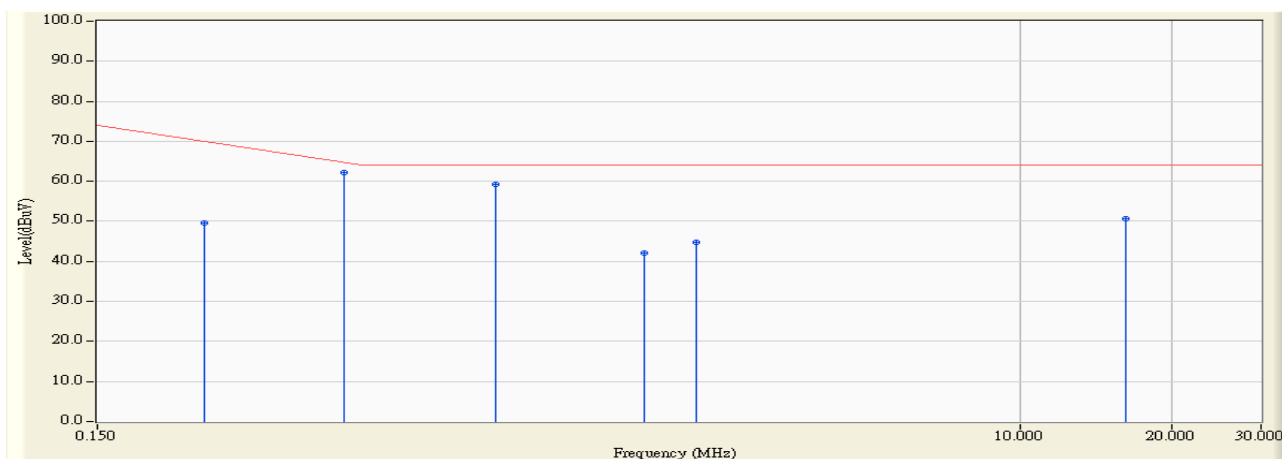


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV)	Margin (dB)	Limit (dBμV)	Detector Type
1		0.244	10.000	41.880	51.880	-29.434	81.314	QUASIPeAK
2	*	0.462	9.956	53.130	63.086	-12.000	75.086	QUASIPeAK
3		0.917	9.930	51.370	61.300	-12.700	74.000	QUASIPeAK
4		1.814	9.920	42.510	52.430	-21.570	74.000	QUASIPeAK
5		2.287	9.920	43.810	53.730	-20.270	74.000	QUASIPeAK
6		16.228	10.060	43.270	53.330	-20.670	74.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:05
Limit : ISN_Voltage_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ISN-T2 - Line1
Power : AC 230V/50Hz	Note : Mode 1, ISN Telecom

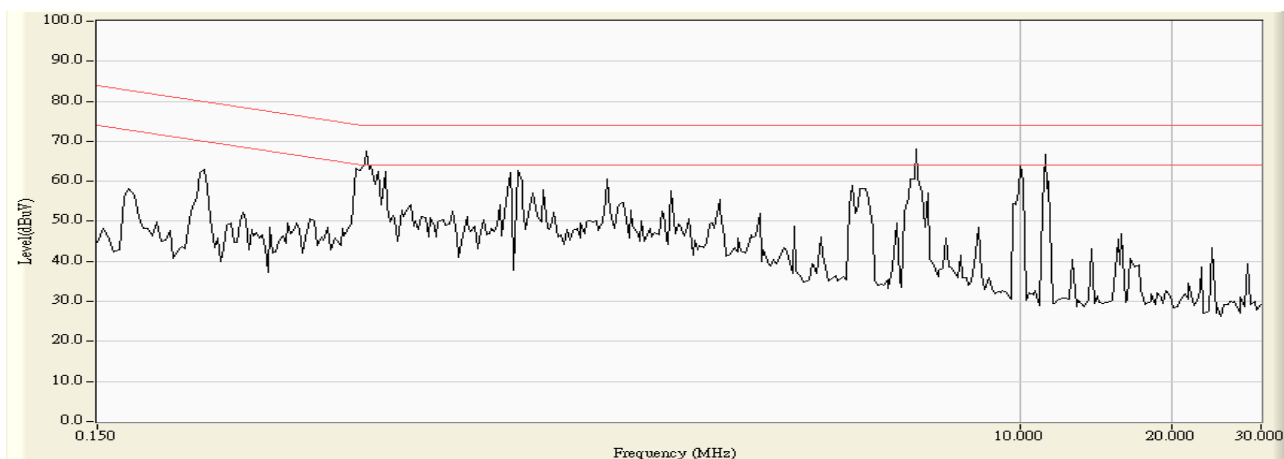


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV)	Margin (dB)	Limit (dBμV)	Detector Type
1		0.244	10.000	39.730	49.730	-21.584	71.314	AVERAGE
2	*	0.462	9.956	52.050	62.006	-3.080	65.086	AVERAGE
3		0.917	9.930	49.300	59.230	-4.770	64.000	AVERAGE
4		1.814	9.920	32.040	41.960	-22.040	64.000	AVERAGE
5		2.287	9.920	34.980	44.900	-19.100	64.000	AVERAGE
6		16.228	10.060	40.650	50.710	-13.290	64.000	AVERAGE

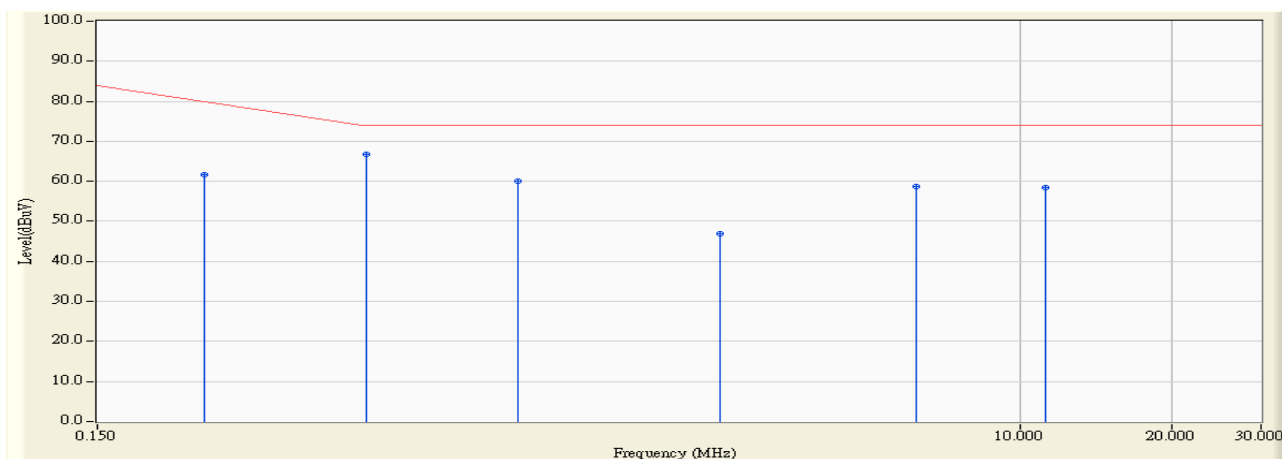
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:48
Limit : ISN_Voltage_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN 10Mbps



Site : SR-1	Time : 2009/04/01 - 00:50
Limit : ISN_Voltage_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN 10Mbps

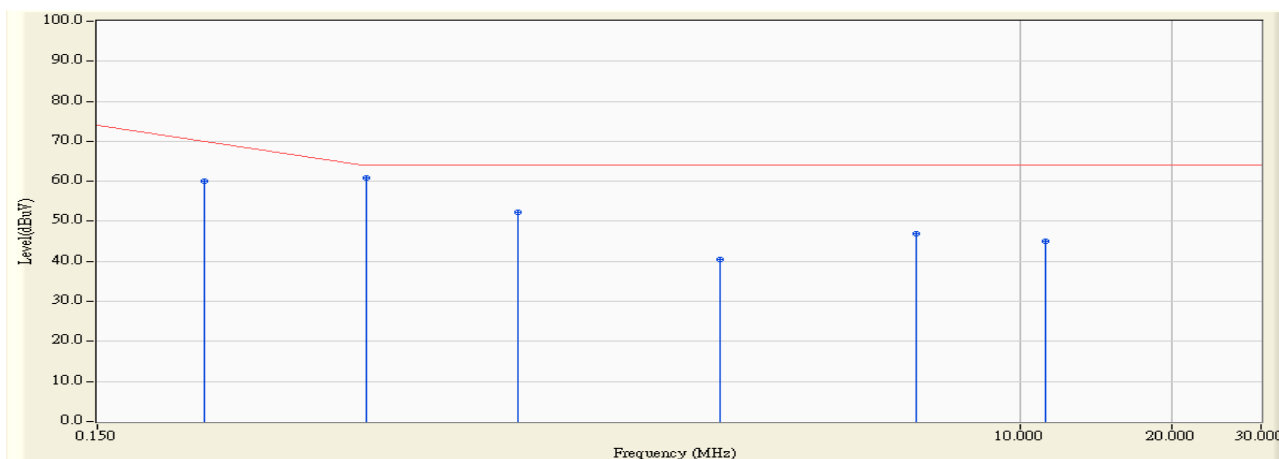


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.244	9.940	51.780	61.720	-19.594	81.314	QUASIPeAK
2	*	0.509	9.900	56.730	66.630	-7.370	74.000	QUASIPeAK
3		1.021	9.900	50.190	60.090	-13.910	74.000	QUASIPeAK
4		2.548	9.900	37.010	46.910	-27.090	74.000	QUASIPeAK
5		6.252	9.870	48.870	58.740	-15.260	74.000	QUASIPeAK
6		11.252	9.849	48.570	58.419	-15.581	74.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:50
Limit : ISN_Voltage_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN 10Mbps

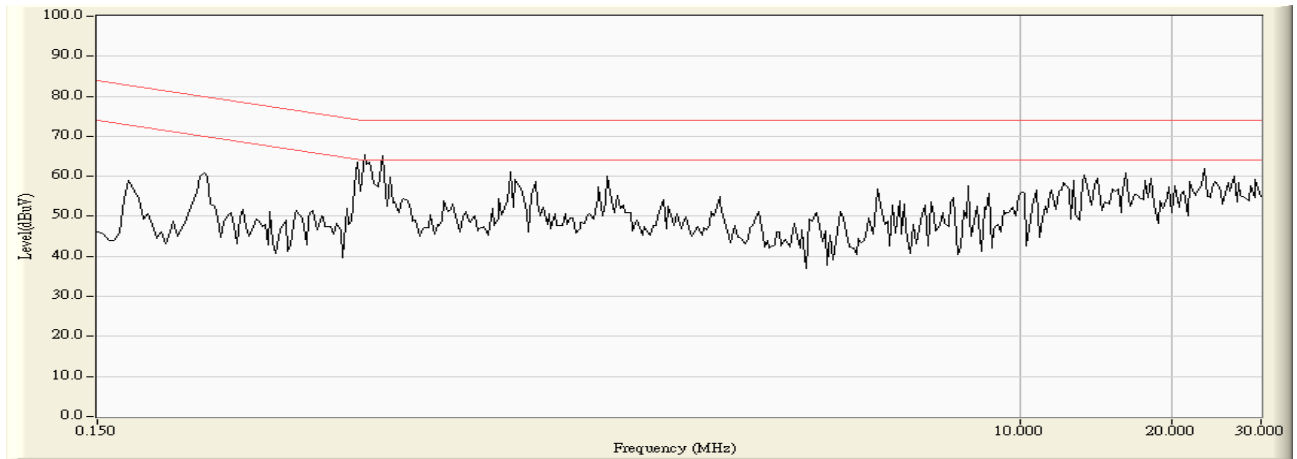


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.244	9.940	50.020	59.960	-11.354	71.314	AVERAGE
2	*	0.509	9.900	51.040	60.940	-3.060	64.000	AVERAGE
3		1.021	9.900	42.260	52.160	-11.840	64.000	AVERAGE
4		2.548	9.900	30.630	40.530	-23.470	64.000	AVERAGE
5		6.252	9.870	37.100	46.970	-17.030	64.000	AVERAGE
6		11.252	9.849	35.250	45.099	-18.901	64.000	AVERAGE

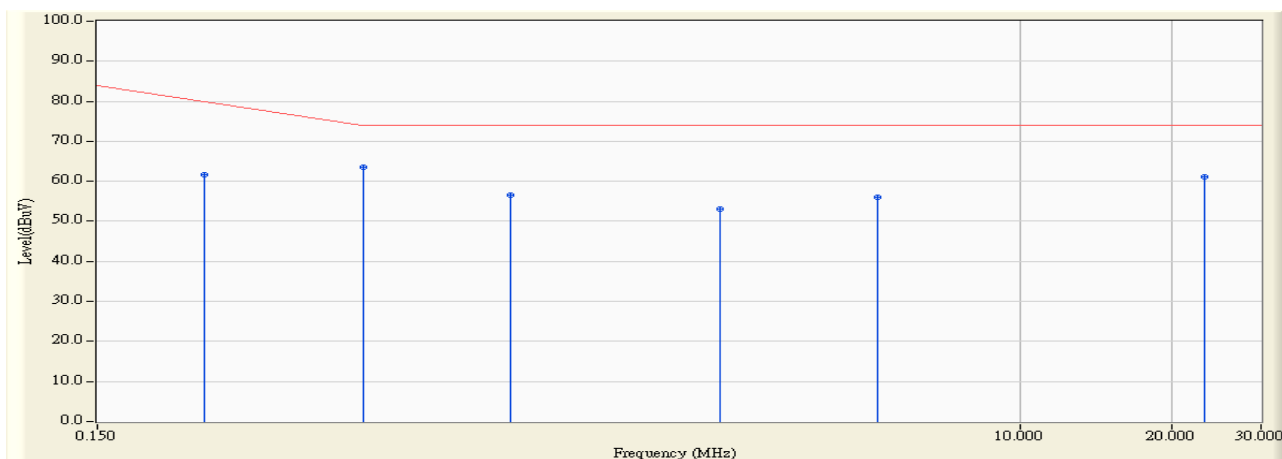
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:44
Limit : ISN_Voltage_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN 100Mbps



Site : SR-1	Time : 2009/04/01 - 00:44
Limit : ISN_Voltage_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN 100Mbps

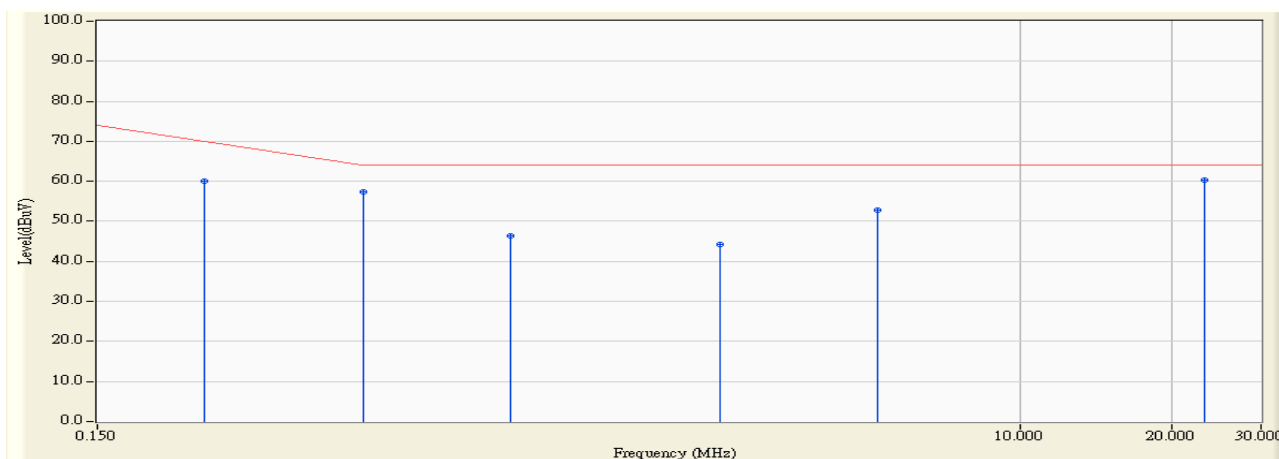


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV)	Margin (dB)	Limit (dBμV)	Detector Type
1		0.244	9.940	51.780	61.720	-19.594	81.314	QUASIPeAK
2	*	0.505	9.900	53.650	63.550	-10.450	74.000	QUASIPeAK
3		0.986	9.900	46.690	56.590	-17.410	74.000	QUASIPeAK
4		2.552	9.900	43.110	53.010	-20.990	74.000	QUASIPeAK
5		5.236	9.880	46.070	55.950	-18.050	74.000	QUASIPeAK
6		23.130	9.970	51.280	61.250	-12.750	74.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:44
Limit : ISN_Voltage_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ISN-T4 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN 100Mbps

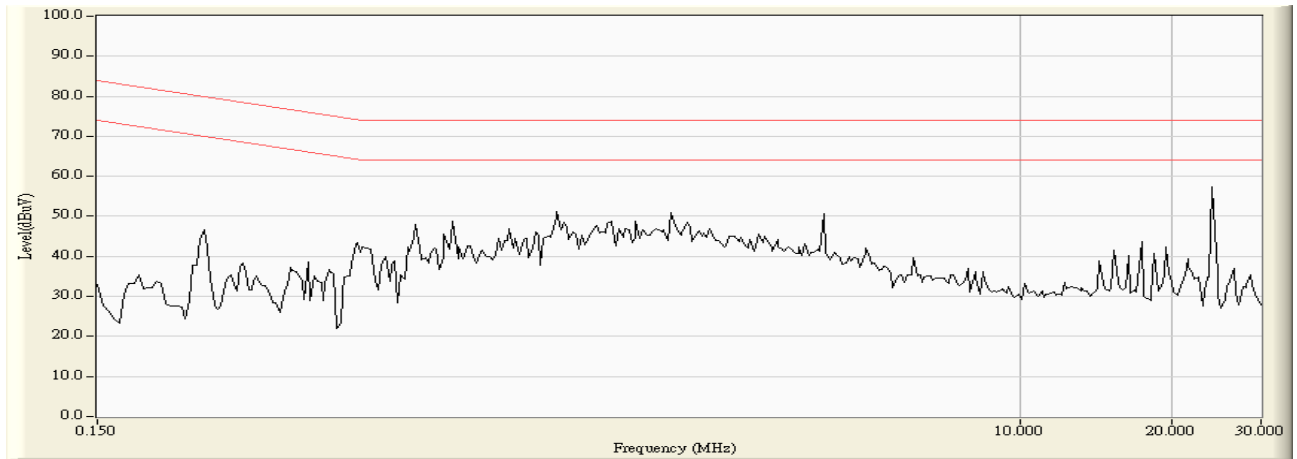


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.244	9.940	50.160	60.100	-11.214	71.314	AVERAGE
2		0.505	9.900	47.540	57.440	-6.560	64.000	AVERAGE
3		0.986	9.900	36.450	46.350	-17.650	64.000	AVERAGE
4		2.552	9.900	34.400	44.300	-19.700	64.000	AVERAGE
5		5.236	9.880	42.910	52.790	-11.210	64.000	AVERAGE
6	*	23.130	9.970	50.230	60.200	-3.800	64.000	AVERAGE

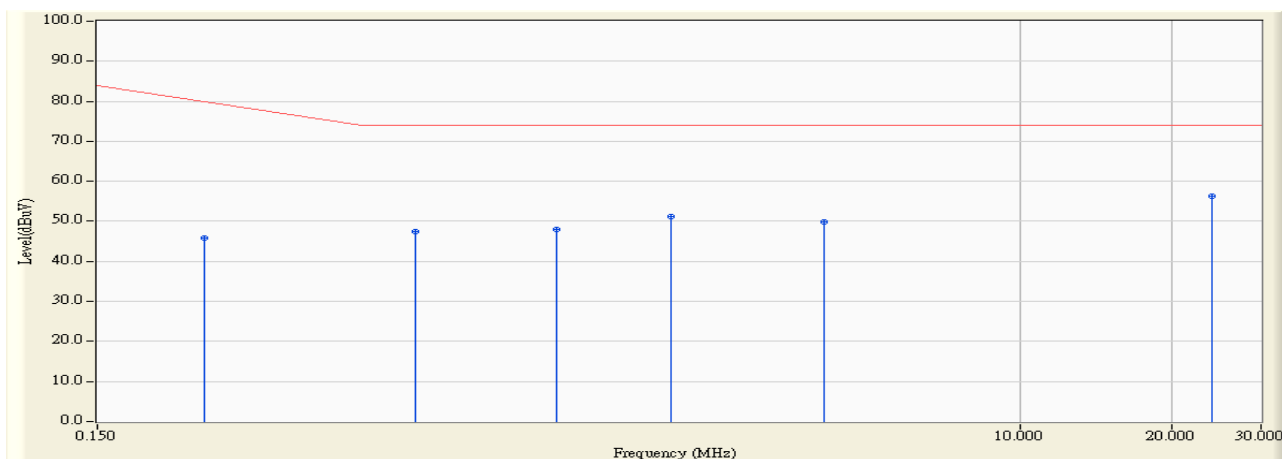
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:52
Limit : ISN_Voltage_B_00M_QP	Margin : 10
EUT : Notebook	Probe : ISN-T2 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN Telecom



Site : SR-1	Time : 2009/04/01 - 00:52
Limit : ISN_Voltage_B_00M_QP	Margin : 0
EUT : Notebook	Probe : ISN-T2 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN Telecom

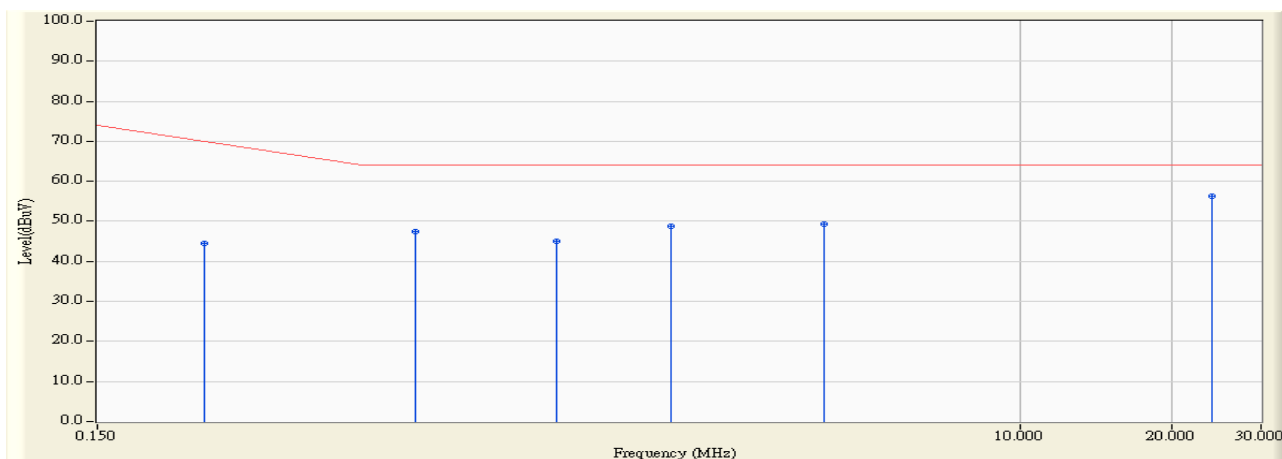


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.244	10.000	35.740	45.740	-35.574	81.314	QUASIPeAK
2		0.638	9.940	37.480	47.420	-26.580	74.000	QUASIPeAK
3		1.216	9.930	38.080	48.010	-25.990	74.000	QUASIPeAK
4		2.048	9.920	41.400	51.320	-22.680	74.000	QUASIPeAK
5		4.095	9.910	40.020	49.930	-24.070	74.000	QUASIPeAK
6	*	23.998	10.040	46.390	56.430	-17.570	74.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : SR-1	Time : 2009/04/01 - 00:52
Limit : ISN_Voltage_B_00M_AV	Margin : 0
EUT : Notebook	Probe : ISN-T2 - Line1
Power : AC 230V/50Hz	Note : Mode 2, ISN Telecom



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.244	10.000	34.510	44.510	-26.804	71.314	AVERAGE
2		0.638	9.940	37.450	47.390	-16.610	64.000	AVERAGE
3		1.216	9.930	34.980	44.910	-19.090	64.000	AVERAGE
4		2.048	9.920	38.980	48.900	-15.100	64.000	AVERAGE
5		4.095	9.910	39.350	49.260	-14.740	64.000	AVERAGE
6	*	23.998	10.040	46.380	56.420	-7.580	64.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

4.7. Test Photograph

Test Mode : Mode 1

Description : Front View of ISN Test



Test Mode : Mode 1

Description : Back View of ISN Test



Test Mode : Mode 2

Description : Front View of ISN Test



Test Mode : Mode 2

Description : Back View of ISN Test

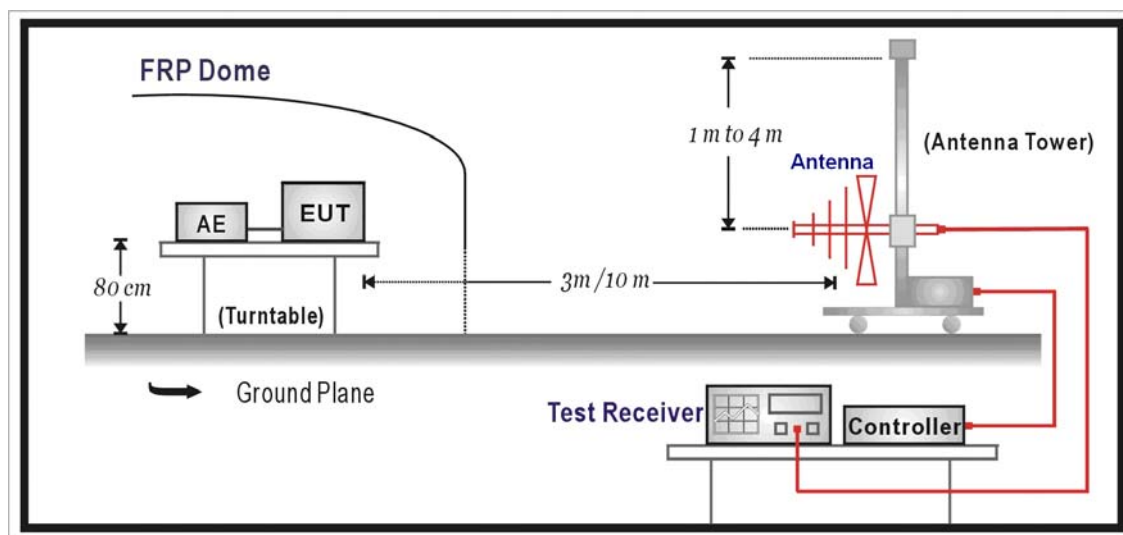


5. Radiated Emission

5.1. Test Specification

According to EMC Standard : EN 55022

5.2. Test Setup



5.3. Limit

Limits		
Frequency (MHz)	Distance (m)	dBuV/m
30 – 230	10	30
230 – 1000	10	37

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

5.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

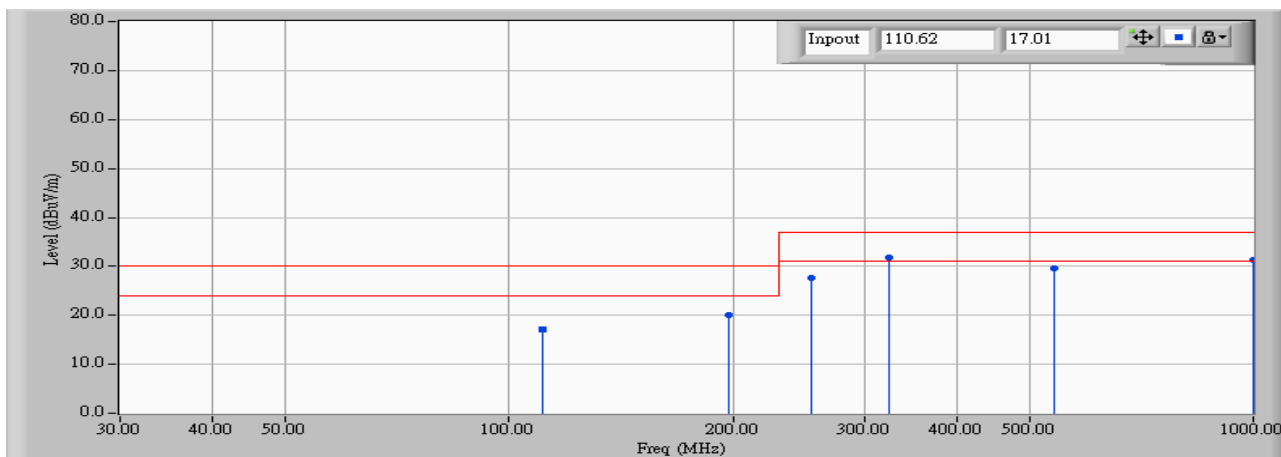
Radiated emissions were investigated over the frequency range from 30MHz to 1GHz using a receiver bandwidth of 120kHz. Radiated was performed at an antenna to EUT distance of 10 meters.

5.5. Deviation from Test Standard

No deviation.

5.6. Test Result

Site : OATS-1	Time : 2009/03/27 - 14:59
Limit : CISPR_B_10M_QP	Margin : 6
EUT : Notebook	Probe : Site1_CBL6112_10M_0811 - HORIZONTAL
Power : AC 230V/50Hz	Note : Mode 1

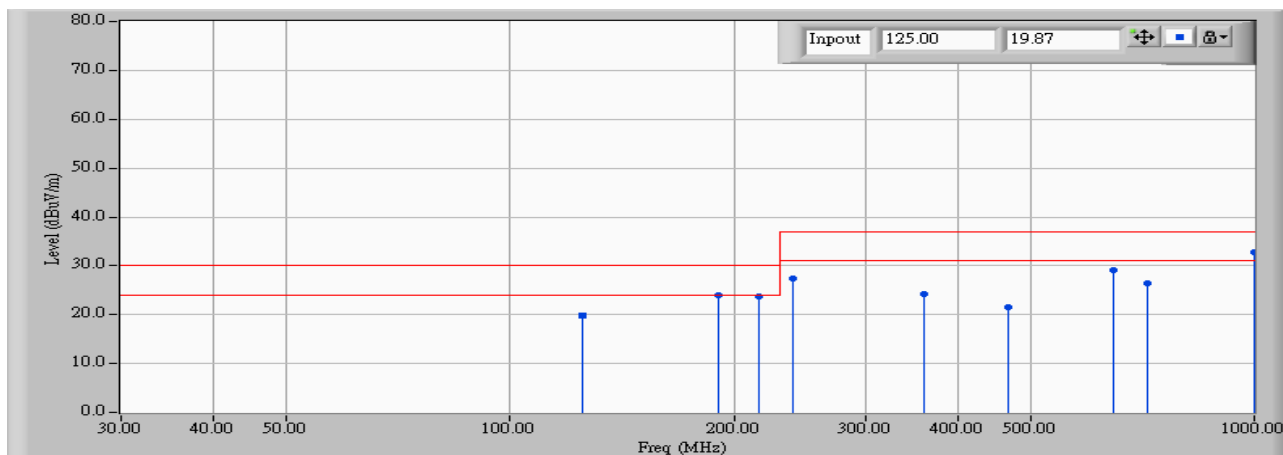


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		110.625	13.014	4.000	17.014	-12.986	30.000	QUASIPeAK
2		197.278	10.930	9.200	20.130	-9.870	30.000	QUASIPeAK
3		254.900	14.743	13.000	27.743	-9.257	37.000	QUASIPeAK
4	*	324.000	16.702	15.000	31.702	-5.298	37.000	QUASIPeAK
5		540.000	22.197	7.500	29.697	-7.303	37.000	QUASIPeAK
6		998.217	26.210	5.200	31.410	-5.590	37.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : OATS-1	Time : 2009/03/27 - 14:17
Limit : CISPR_B_10M_QP	Margin : 6
EUT : Notebook	Probe : Site1_CBL6112_10M_0811 - VERTICAL
Power : AC 230V/50Hz	Note : Mode 1

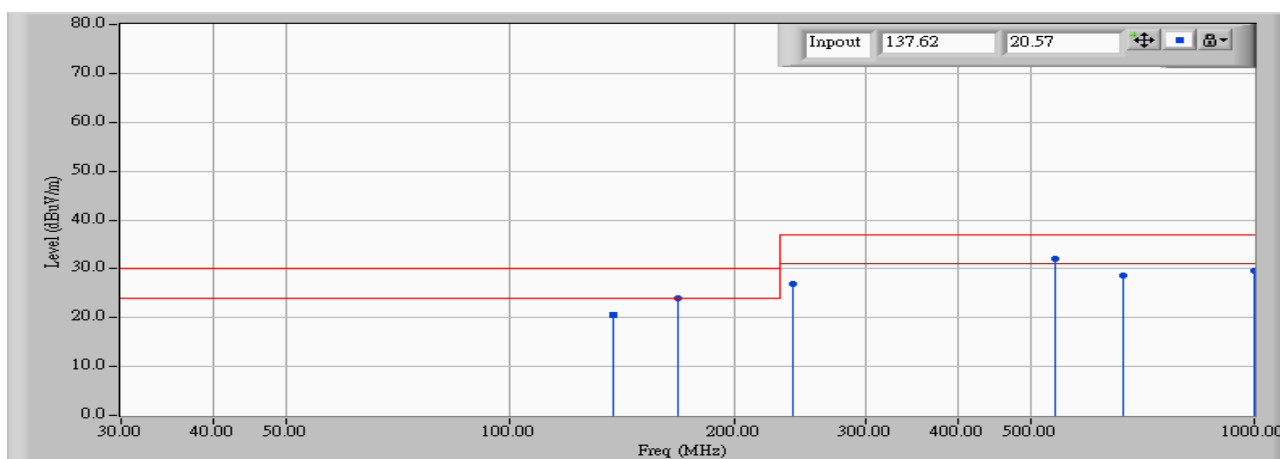


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		125.000	13.570	6.300	19.870	-10.130	30.000	QUASIPeAK
2	*	190.850	10.675	13.200	23.875	-6.125	30.000	QUASIPeAK
3		215.978	10.571	13.100	23.671	-6.329	30.000	QUASIPeAK
4		240.000	13.300	14.200	27.500	-9.500	37.000	QUASIPeAK
5		359.946	17.839	6.300	24.139	-12.861	37.000	QUASIPeAK
6		467.626	20.387	1.200	21.587	-15.413	37.000	QUASIPeAK
7		648.000	22.949	6.200	29.149	-7.851	37.000	QUASIPeAK
8		719.941	24.099	2.300	26.399	-10.601	37.000	QUASIPeAK
9	*	998.217	26.210	6.600	32.810	-4.190	37.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : OATS-1	Time : 2009/04/01
Limit : CISPR_B_10M_QP	Margin : 6
EUT : Notebook	Probe : Site1_CBL6112_10M_0811 - HORIZONTAL
Power : AC 230V/50Hz	Note : Mode 2

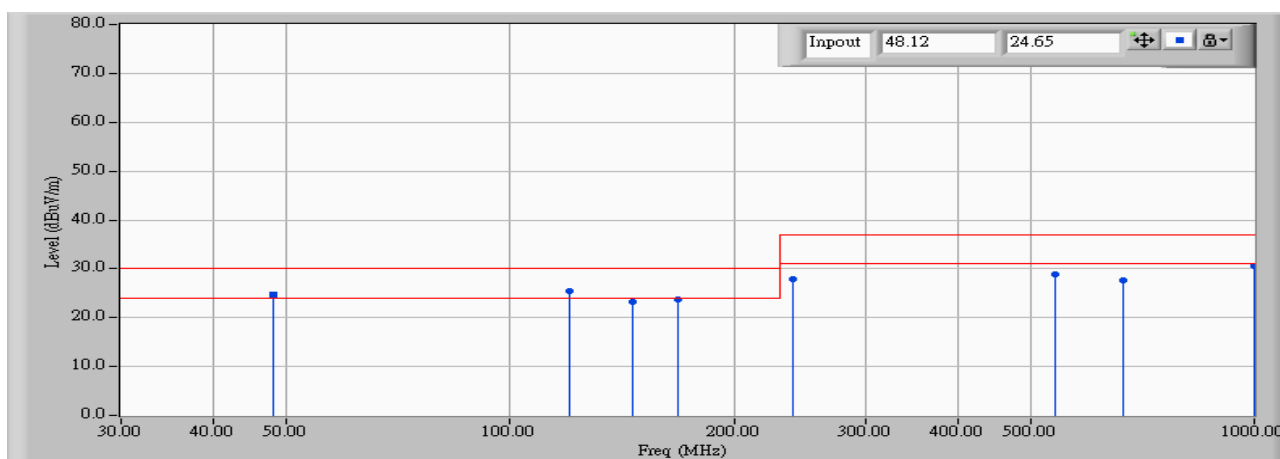


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		137.620	12.968	7.600	20.568	-9.432	30.000	QUASIPeAK
2		167.970	11.297	12.700	23.997	-6.003	30.000	QUASIPeAK
3		240.170	13.319	13.700	27.020	-9.980	37.000	QUASIPeAK
4	*	540.000	22.197	9.900	32.097	-4.903	37.000	QUASIPeAK
5		665.800	22.900	5.700	28.600	-8.400	37.000	QUASIPeAK
6		998.400	26.212	3.400	29.612	-7.388	37.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : OATS-1	Time : 2009/04/01
Limit : CISPR_B_10M_QP	Margin : 6
EUT : Notebook	Probe : Site1_CBL6112_10M_0811 - VERTICAL
Power : AC 230V/50Hz	Note : Mode 2



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		48.120	9.946	14.700	24.646	-5.354	30.000	QUASIPeAK
2	*	120.000	13.396	12.000	25.397	-4.603	30.000	QUASIPeAK
3		145.820	12.339	10.800	23.139	-6.861	30.000	QUASIPeAK
4		167.970	11.297	12.500	23.797	-6.203	30.000	QUASIPeAK
5		240.000	13.300	14.600	27.900	-9.100	37.000	QUASIPeAK
6		540.000	22.197	6.700	28.897	-8.103	37.000	QUASIPeAK
7		665.800	22.900	4.800	27.700	-9.300	37.000	QUASIPeAK
8		998.400	26.212	4.300	30.512	-6.488	37.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

5.7. Test Photograph

Test Mode : Mode 1

Description : Front View of Radiated Test



Test Mode : Mode 1

Description : Back View of Radiated Test



Test Mode : Mode 2

Description : Front View of Radiated Test



Test Mode : Mode 2

Description : Back View of Radiated Test

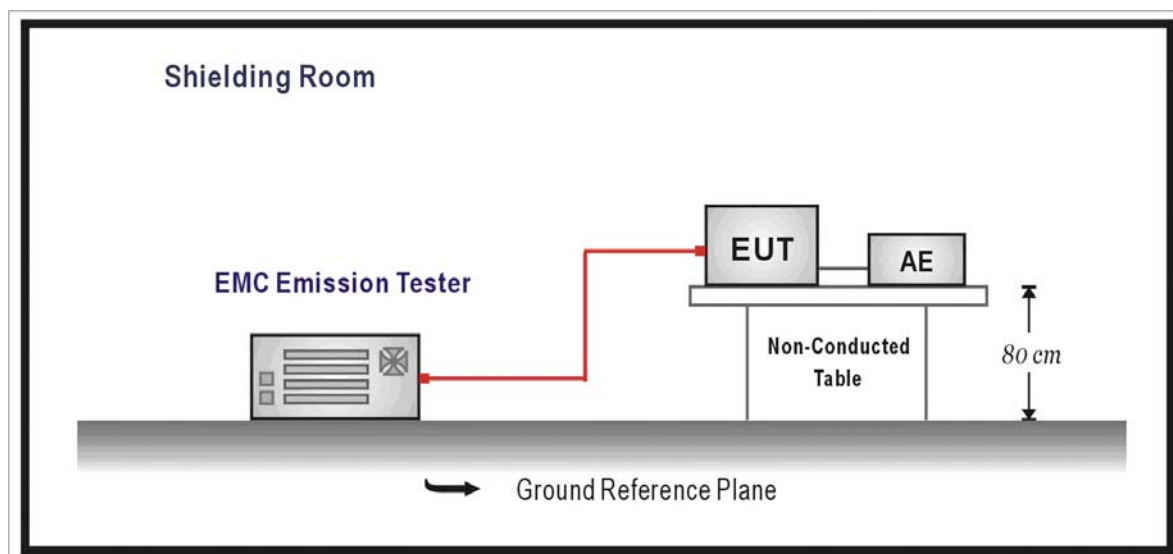


6. Harmonic Current Emission

6.1. Test Specification

According to EMC Standard : EN 61000-3-2

6.2. Test Setup



6.3. Limit

(a) Limits of Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current A	Harmonics Order n	Maximum Permissible harmonic current A
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	$8 \leq n \leq 40$	$0.23 * 8/n$
11	0.33		
13	0.21		
$15 \leq n \leq 39$	$0.15 * 15/n$		

(b) Limits of Class B Harmonics Currents

For Class B equipment, the harmonic of the input current shall not exceed the maximum permissible values given in table that is the limit of Class A multiplied by a factor of 1.5.

(c) Limits of Class C Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current Expressed as a percentage of the input current at the fundamental frequency %
2	2
3	$30 \cdot \lambda^*$
5	10
7	7
9	5
$11 \leq n \leq 39$ (odd harmonics only)	3
* λ is the circuit power factor	

(d) Limits of Class D Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current per watt mA/W	Maximum Permissible harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
$11 \leq n \leq 39$ (odd harmonics only)	$3.85/n$	See limit of Class A

6.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

6.5. Deviation from Test Standard

No deviation.

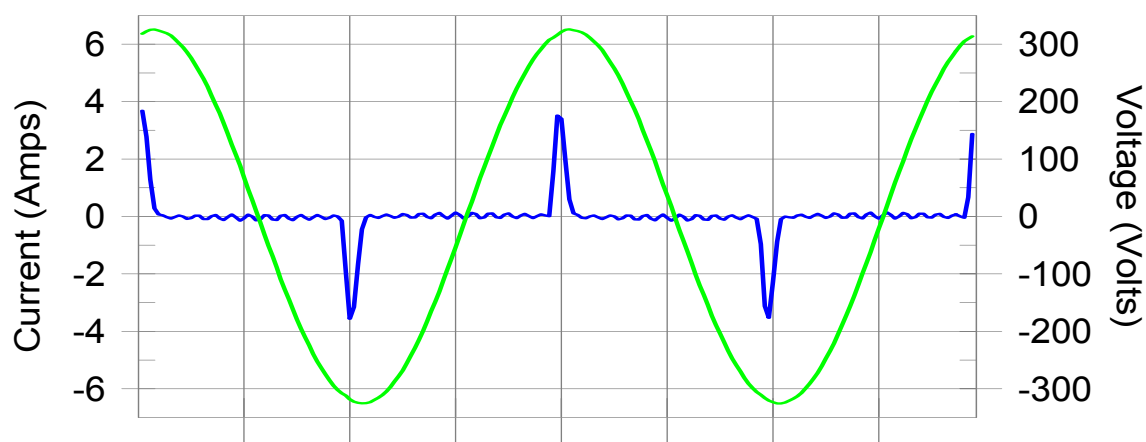
6.6. Test Result

Product	Notebook		
Test Item	Power Harmonics		
Test Mode	Mode 1		
Date of Test	2009/04/03	Test Site	No.3 Shielded Room

Test Result: Pass

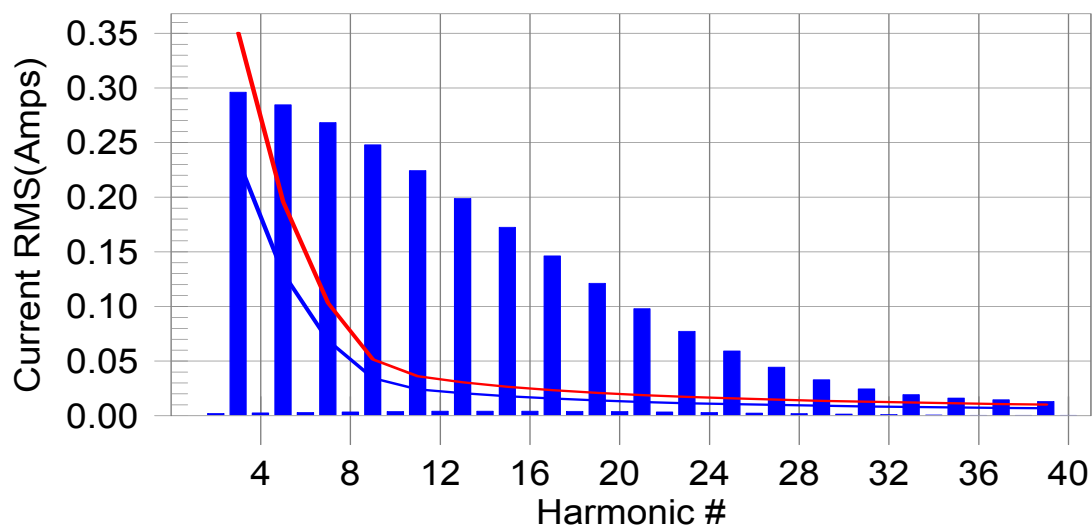
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line

European Limits



Test result: Pass Worst harmonic was #0 with 0.00% of the limit.

Test Result: Pass Source qualification: Normal
 THC(A): 0.00 I-THD(%): 0.00 POHC(A): 0.000 POHC Limit(A): 0.000
 Highest parameter values during test:
 V_RMS (Volts): 229.62 Frequency(Hz): 50.00
 I_Peak (Amps): 3.749 I_RMS (Amps): 0.761
 I_Fund (Amps): 0.307 Crest Factor: 20.020
 Power (Watts): 68.7 Power Factor: 0.396

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002						
3	0.244	0.234	0.0	0.296	0.350	0.00	Pass
4	0.003						
5	0.235	0.131	0.0	0.285	0.196	0.00	Pass
6	0.003						
7	0.221	0.069	0.0	0.268	0.103	0.00	Pass
8	0.004						
9	0.204	0.034	0.0	0.248	0.052	0.00	Pass
10	0.004						
11	0.184	0.024	0.0	0.224	0.036	0.00	Pass
12	0.004						
13	0.163	0.021	0.0	0.199	0.031	0.00	Pass
14	0.004						
15	0.141	0.018	0.0	0.172	0.026	0.00	Pass
16	0.004						
17	0.120	0.016	0.0	0.146	0.023	0.00	Pass
18	0.004						
19	0.099	0.014	0.0	0.121	0.021	0.00	Pass
20	0.004						
21	0.080	0.013	0.0	0.098	0.019	0.00	Pass
22	0.003						
23	0.063	0.011	0.0	0.077	0.017	0.00	Pass
24	0.003						
25	0.048	0.011	0.0	0.059	0.016	0.00	Pass
26	0.003						
27	0.036	0.010	0.0	0.044	0.015	0.00	Pass
28	0.002						
29	0.027	0.009	0.0	0.033	0.014	0.00	Pass
30	0.002						
31	0.020	0.009	0.0	0.025	0.013	0.00	Pass
32	0.001						
33	0.016	0.008	0.0	0.019	0.012	0.00	Pass
34	0.001						
35	0.014	0.008	0.0	0.016	0.011	0.00	Pass
36	0.000						
37	0.012	0.007	0.0	0.015	0.011	0.00	Pass
38	0.000						
39	0.011	0.007	0.0	0.013	0.010	0.00	Pass
40	0.000						

1.Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

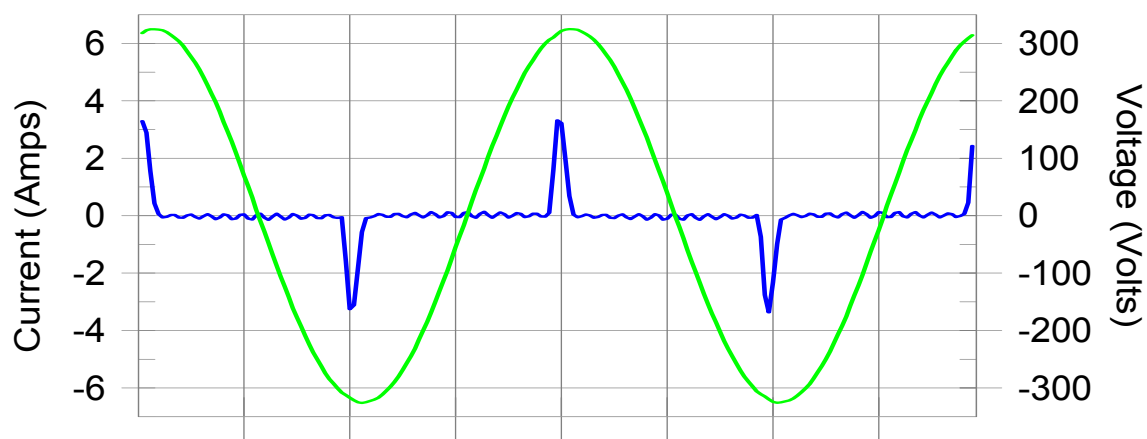
2:According to EN61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.

Product	Notebook		
Test Item	Power Harmonics		
Test Mode	Mode 2		
Date of Test	2009/04/03	Test Site	No.3 Shielded Room

Test Result: Pass

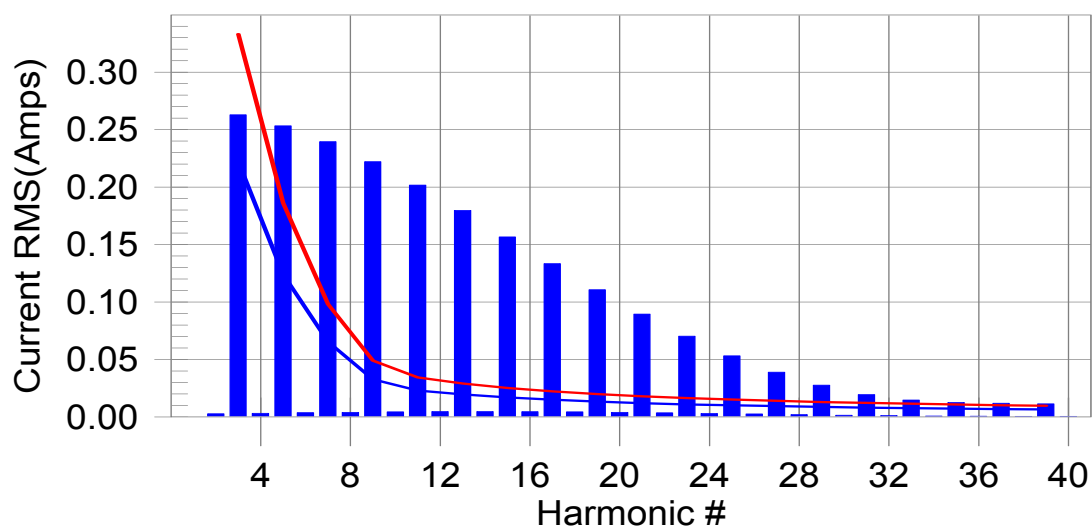
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line

European Limits



Test result: Pass Worst harmonic was #0 with 0.00% of the limit.

Test Result: Pass Source qualification: Normal
 THC(A): 0.00 I-THD(%): 0.00 POHC(A): 0.000 POHC Limit(A): 0.000
 Highest parameter values during test:
 V_RMS (Volts): 229.63 Frequency(Hz): 50.00
 I_Peak (Amps): 3.548 I_RMS (Amps): 0.718
 I_Fund (Amps): 0.283 Crest Factor: 5.291
 Power (Watts): 65.3 Power Factor: 0.396

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.003						
3	0.264	0.222	0.0	0.263	0.333	0.00	Pass
4	0.003						
5	0.254	0.124	0.0	0.253	0.186	0.00	Pass
6	0.004						
7	0.240	0.065	0.0	0.240	0.098	0.00	Pass
8	0.004						
9	0.222	0.033	0.0	0.222	0.049	0.00	Pass
10	0.004						
11	0.202	0.023	0.0	0.202	0.034	0.00	Pass
12	0.005						
13	0.179	0.020	0.0	0.180	0.029	0.00	Pass
14	0.005						
15	0.156	0.017	0.0	0.157	0.025	0.00	Pass
16	0.005						
17	0.133	0.015	0.0	0.133	0.022	0.00	Pass
18	0.004						
19	0.110	0.013	0.0	0.111	0.020	0.00	Pass
20	0.004						
21	0.088	0.012	0.0	0.090	0.018	0.00	Pass
22	0.004						
23	0.069	0.011	0.0	0.070	0.016	0.00	Pass
24	0.003						
25	0.052	0.010	0.0	0.053	0.015	0.00	Pass
26	0.003						
27	0.038	0.009	0.0	0.039	0.014	0.00	Pass
28	0.002						
29	0.027	0.009	0.0	0.028	0.013	0.00	Pass
30	0.002						
31	0.020	0.008	0.0	0.020	0.012	0.00	Pass
32	0.001						
33	0.015	0.008	0.0	0.015	0.011	0.00	Pass
34	0.001						
35	0.013	0.007	0.0	0.013	0.011	0.00	Pass
36	0.001						
37	0.012	0.007	0.0	0.012	0.010	0.00	Pass
38	0.001						
39	0.012	0.006	0.0	0.011	0.010	0.00	Pass
40	0.001						

1.Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

2:According to EN61000-3-2 paragraph 7 the note 1 and 2 are valid for all applications having an active input power >75W. Others the result should be pass.

6.7. Test Photograph

Test Mode : Mode 1

Description : Power Harmonics Test Setup



Test Mode : Mode 2

Description : Power Harmonics Test Setup

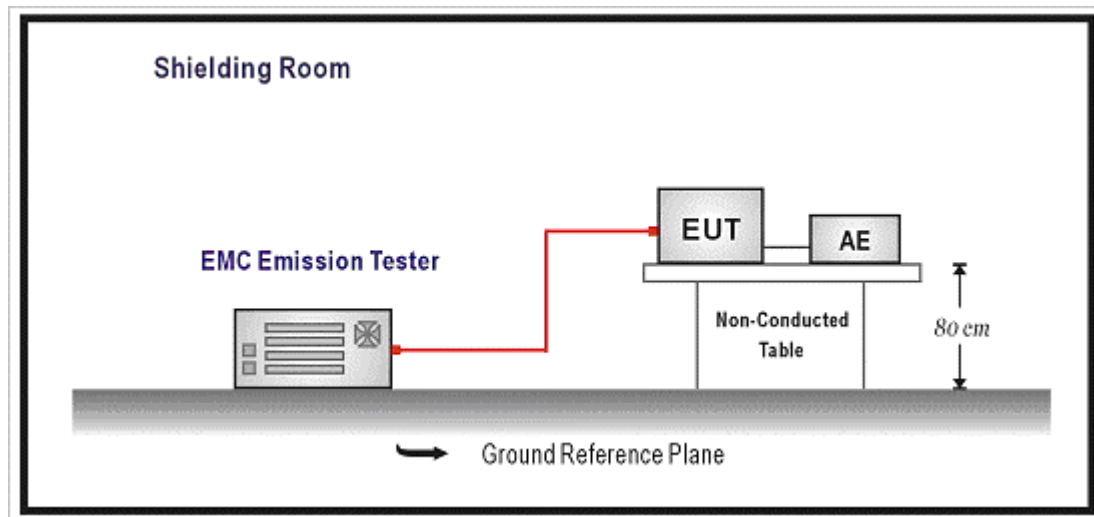


7. Voltage Fluctuation and Flicker

7.1. Test Specification

According to EMC Standard : EN 61000-3-3

7.2. Test Setup



7.3. Limit

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
 - the value of P_{1t} shall not be greater than 0.65;
 - the value of $d(t)$ during a voltage change shall not exceed 3.3 % for more than 500 ms;
 - the relative steady-state voltage change, d_c , shall not exceed 3.3 %;
 - the maximum relative voltage change, d_{max} , shall not exceed;
- a) 4 % without additional conditions;
 - b) 6 % for equipment which is:
 - switched manually, or
 - switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

NOTE The cycling frequency will be further limited by the P_{st} and P_{1t} limit.

For example: a d_{max} of 6% producing a rectangular voltage change characteristic twice per hour will give a P_{1t} of about 0.65.

- c) 7 % for equipment which is:
 - attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
 - switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

P_{st} and P_{1t} requirements shall not be applied to voltage changes caused by manual switching.

7.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

7.5. Deviation from Test Standard

No deviation.

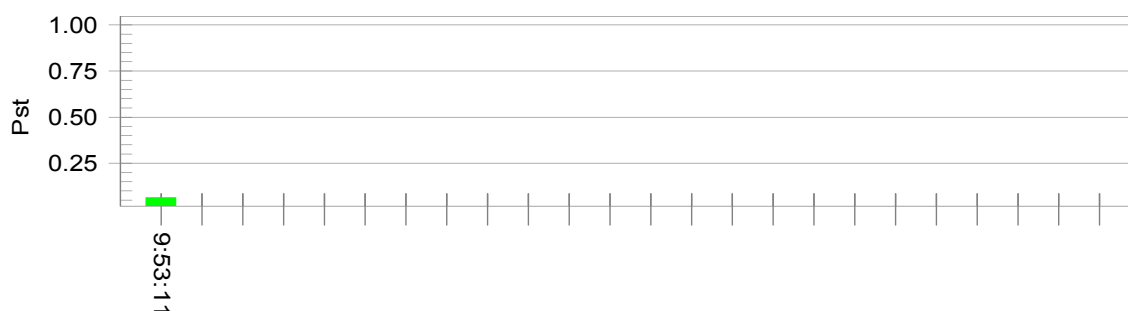
7.6. Test Result

Product	Notebook		
Test Item	Voltage Fluctuation and Flicker		
Test Mode	Mode 1		
Date of Test	2009/04/03	Test Site	No.3 Shielded Room

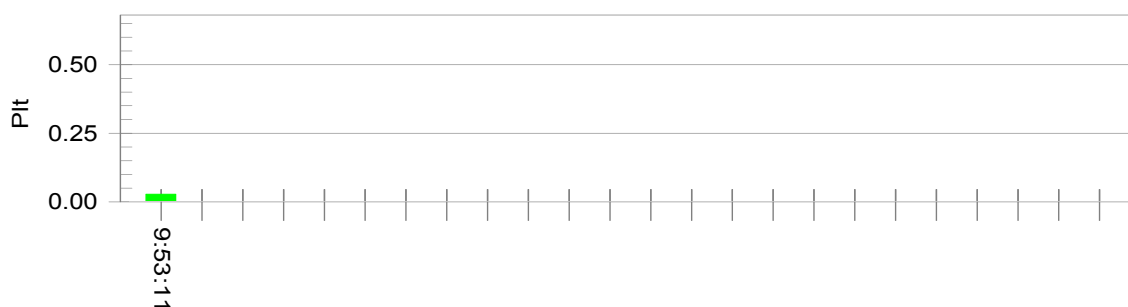
Test Result: Pass
Pst_i and limit line

Status: Test Completed

European Limits



Plt and limit line



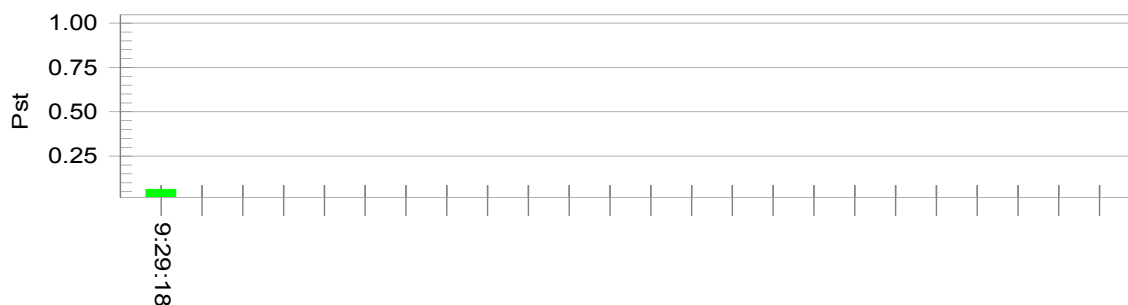
Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.46		
Highest dt (%):	0.00	Test limit (%):	3.30 Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.00	Test limit (%):	3.30 Pass
Highest dmax (%):	0.00	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650 Pass

Product	Notebook		
Test Item	Voltage Fluctuation and Flicker		
Test Mode	Mode 2		
Date of Test	2009/04/03	Test Site	No.3 Shielded Room

Test Result: Pass

Status: Test Completed

Pst_i and limit line
European Limits

Plt and limit line


Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.48		
Highest dt (%):	0.00	Test limit (%):	3.30 Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.00	Test limit (%):	3.30 Pass
Highest dmax (%):	0.00	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650 Pass

7.7. Test Photograph

Test Mode : Mode 1

Description : Flicker Test Setup



Test Mode : Mode 2

Description : Flicker Test Setup

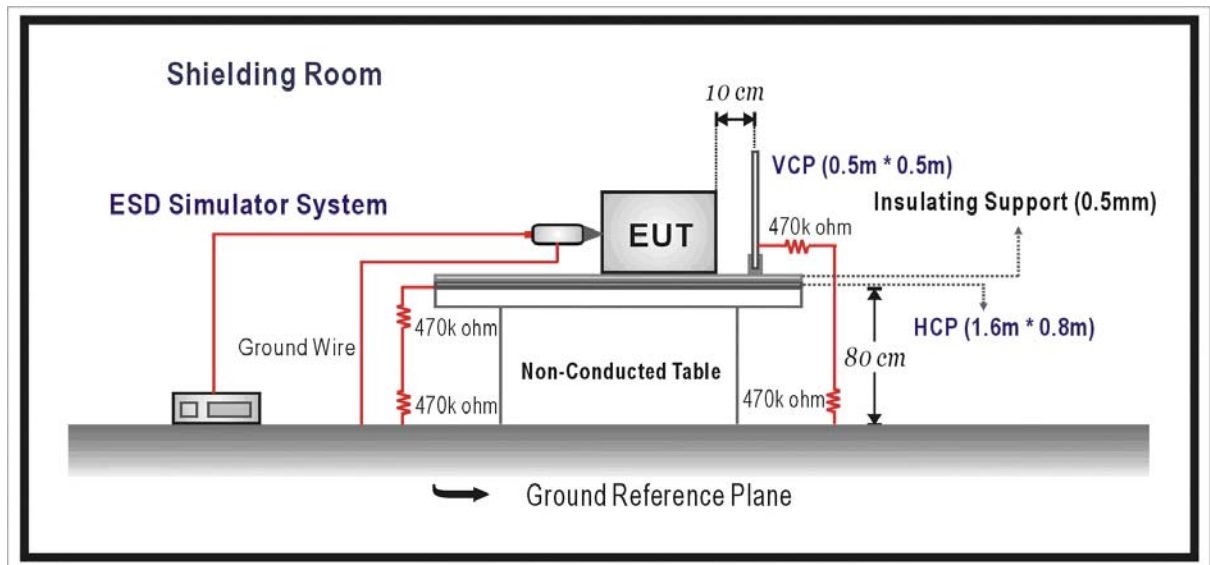


8. Electrostatic Discharge

8.1. Test Specification

According to Standard : IEC 61000-4-2

8.2. Test Setup



8.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Electrostatic Discharge	kV(Charge Voltage)	±8 Air Discharge ±4 Contact Discharge	B

8.4. Test Procedure

Direct application of discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

Indirect application of discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

8.5. Deviation from Test Standard

No deviation.

8.6. Test Result

Product	Notebook		
Test Item	Electrostatic Discharge		
Test Mode	Mode 1		
Date of Test	2009/04/03	Test Site	No.3 Shielded Room

Item	Amount of Discharge	Voltage	Required Criteria	Complied To Criteria (A,B,C)	Results
Air Discharge	10	+8kV	B	B	Pass
	10	-8kV	B	B	Pass
Contact Discharge	25	+4kV	B	B	Pass
	25	-4kV	B	B	Pass
Indirect Discharge (HCP)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP Front)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP Left)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP Back)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP Right)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

NR: No Requirement

- ☒ Meet criteria A: Operate as intended during and after the test
- ☒ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
 - ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
 - ☒ No false alarms or other malfunctions were observed during or after the test.

Remark:

The Contact discharges were applied at least total 200 discharges at a minimum of four test points.

Product	Notebook		
Test Item	Electrostatic Discharge		
Test Mode	Mode 2		
Date of Test	2009/04/03	Test Site	No.3 Shielded Room

Item	Amount of Discharge	Voltage	Required Criteria	Complied To Criteria (A,B,C)	Results
Air Discharge	10	+8kV	B	B	Pass
	10	-8kV	B	B	Pass
Contact Discharge	25	+4kV	B	B	Pass
	25	-4kV	B	B	Pass
Indirect Discharge (HCP)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP Front)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP Left)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP Back)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass
Indirect Discharge (VCP Right)	25	+4kV	B	A	Pass
	25	-4kV	B	A	Pass

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

NR: No Requirement

- ☒ Meet criteria A: Operate as intended during and after the test
- ☒ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
 - ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
 - ☒ No false alarms or other malfunctions were observed during or after the test.

Remark:

The Contact discharges were applied at least total 200 discharges at a minimum of four test points.

8.7. Test Photograph

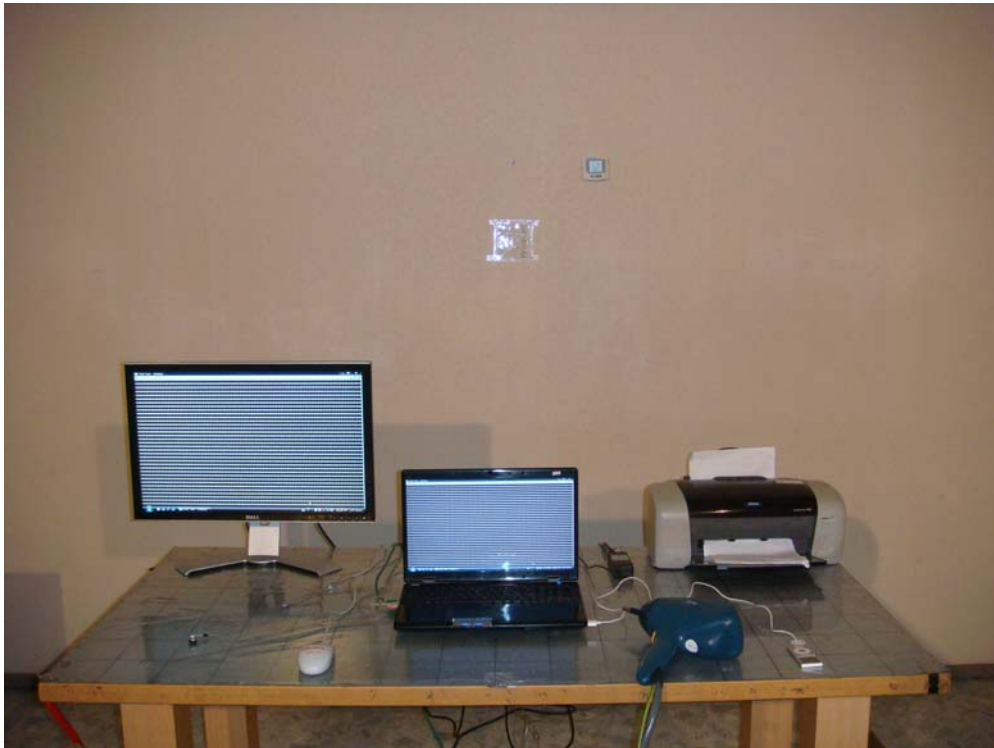
Test Mode : Mode 1

Description : ESD Test Setup



Test Mode : Mode 2

Description : ESD Test Setup

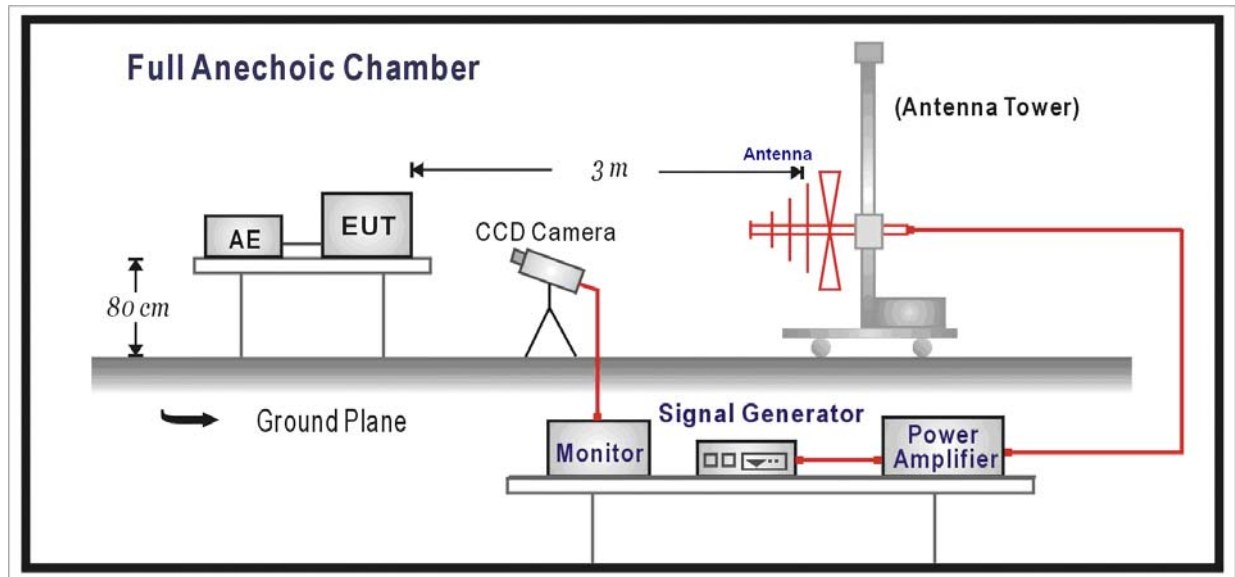


9. Radiated Susceptibility

9.1. Test Specification

According to Standard : IEC 61000-4-3

9.2. Test Setup



9.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Radio-Frequency	MHz	80-1000	A
	Electromagnetic Field	V/m(Un-modulated, rms)	3	
	Amplitude Modulated	% AM (1kHz)	80	

9.4. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.

In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

All the scanning conditions are as follows:

Condition of Test	Remarks
1. Field Strength	3 V/m Level 2
2. Radiated Signal	AM 80% Modulated with 1kHz
3. Scanning Frequency	80MHz - 1000MHz
4 Dwell Time	3 Seconds
5. Frequency step size Δf :	1%
6. The rate of Swept of Frequency	1.5×10^{-3} decades/s

9.5. Deviation from Test Standard

No deviation.

9.6. Test Result

Product	Notebook		
Test Item	Radiated susceptibility		
Test Mode	Mode 1		
Date of Test	2009/04/03	Test Site	Chamber5

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	FRONT	H	3	A	A	PASS
80-1000	FRONT	V	3	A	A	PASS
80-1000	BACK	H	3	A	A	PASS
80-1000	BACK	V	3	A	A	PASS
80-1000	RIGHT	H	3	A	A	PASS
80-1000	RIGHT	V	3	A	A	PASS
80-1000	LEFT	H	3	A	A	PASS
80-1000	LEFT	V	3	A	A	PASS
80-1000	UP	H	3	A	A	PASS
80-1000	UP	V	3	A	A	PASS
80-1000	DOWN	H	3	A	A	PASS
80-1000	DOWN	V	3	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

- ☒ Meet criteria A: Operate as intended during and after the test
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
 - ☐ There was no observable degradation in performance.
 - ☐ EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____ MHz.
- ☒ No false alarms or other malfunctions were observed during or after the test.

Product	Notebook		
Test Item	Radiated susceptibility		
Test Mode	Mode 2		
Date of Test	2009/04/03	Test Site	Chamber5

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	FRONT	H	3	A	A	PASS
80-1000	FRONT	V	3	A	A	PASS
80-1000	BACK	H	3	A	A	PASS
80-1000	BACK	V	3	A	A	PASS
80-1000	RIGHT	H	3	A	A	PASS
80-1000	RIGHT	V	3	A	A	PASS
80-1000	LEFT	H	3	A	A	PASS
80-1000	LEFT	V	3	A	A	PASS
80-1000	UP	H	3	A	A	PASS
80-1000	UP	V	3	A	A	PASS
80-1000	DOWN	H	3	A	A	PASS
80-1000	DOWN	V	3	A	A	PASS

Note:

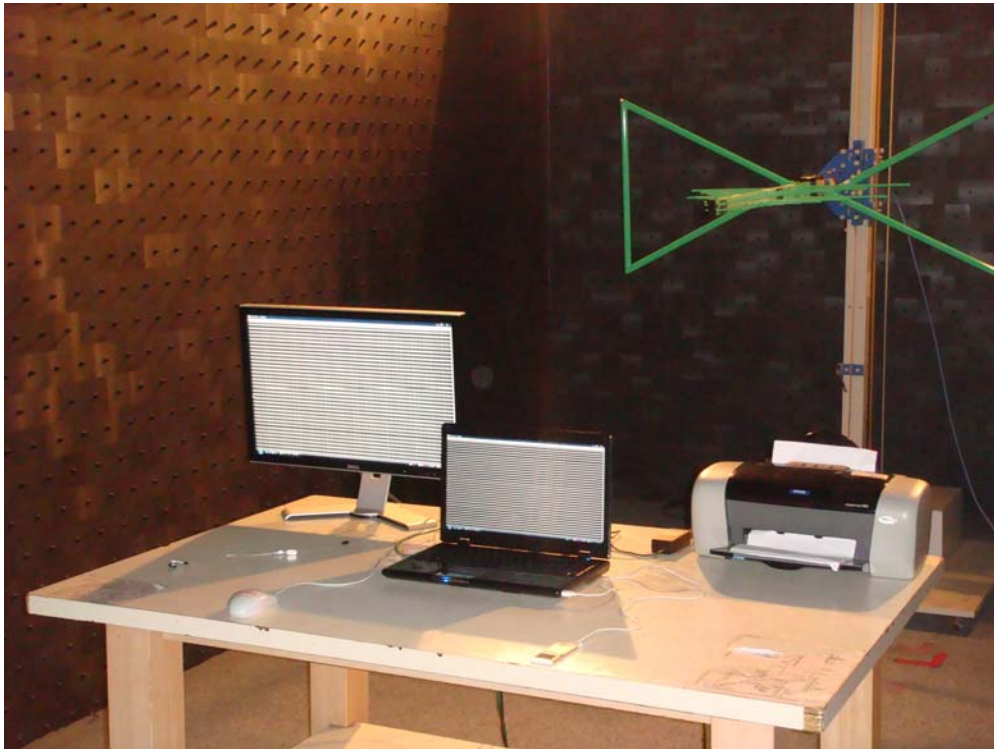
The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

- ☒ Meet criteria A: Operate as intended during and after the test
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
 - ☐ There was no observable degradation in performance.
 - ☐ EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____ MHz.
- ☒ No false alarms or other malfunctions were observed during or after the test.

9.7. Test Photograph

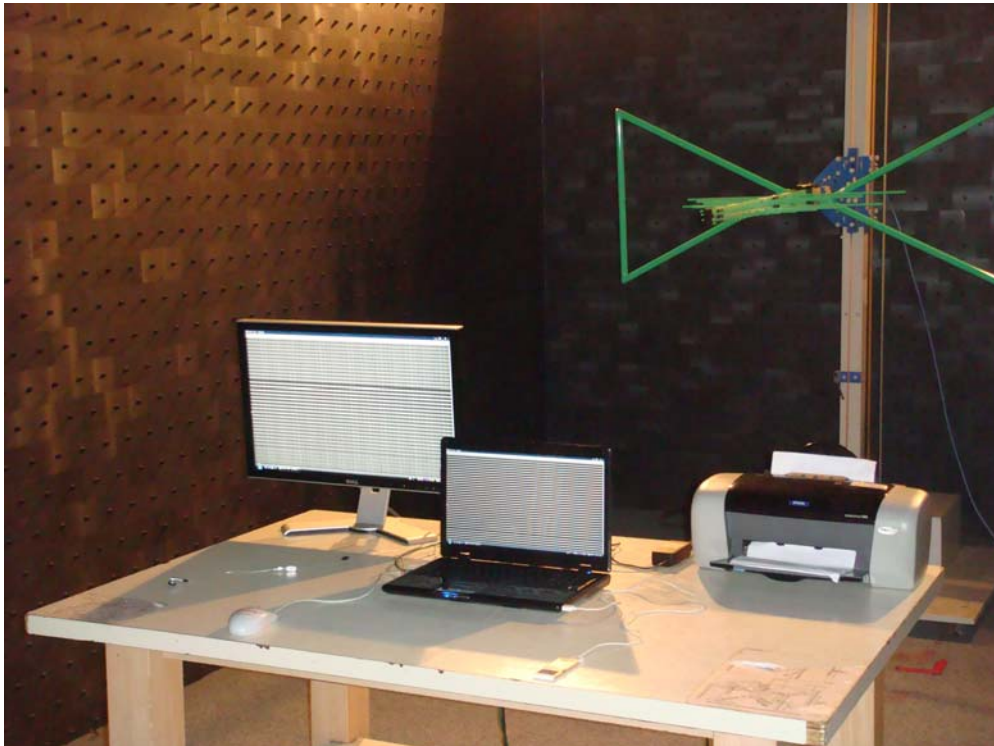
Test Mode : Mode 1

Description : Radiated Susceptibility Test Setup



Test Mode : Mode 2

Description : Radiated Susceptibility Test Setup

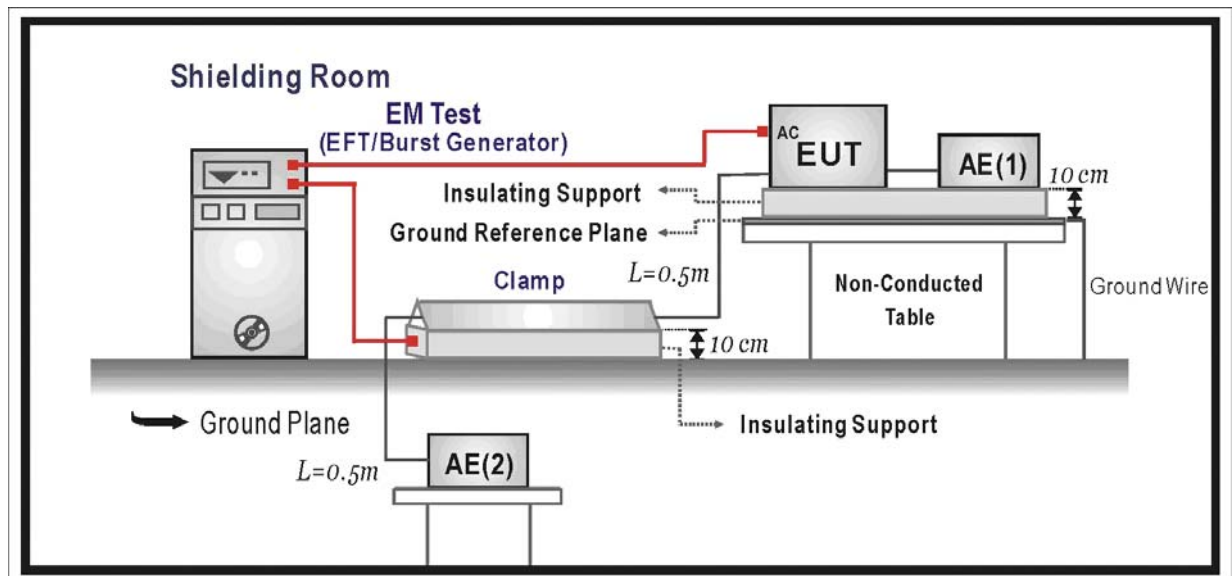


10. Electrical Fast Transient/Burst

10.1. Test Specification

According to Standard : IEC 61000-4-4

10.2. Test Setup



10.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
I/O and communication ports				
	Fast Transients Common Mode	kV (Peak)	+0.5	B
		Tr/Th ns	5/50	
		Rep. Frequency kHz	5	
Input DC Power Ports				
	Fast Transients Common Mode	kV (Peak)	+0.5	B
		Tr/Th ns	5/50	
		Rep. Frequency kHz	5	
Input AC Power Ports				
	Fast Transients Common Mode	kV (Peak)	+1	B
		Tr/Th ns	5/50	
		Rep. Frequency kHz	5	

10.4. Test Procedure

The EUT is placed on a table that is 0.8 meter height. A ground reference plane is placed on the table, and uses a 0.1m insulation between the EUT and ground reference plane.

The minimum area of the ground reference plane is 1m*1m, and 0.65mm thick min, and projected beyond the EUT by at least 0.1m on all sides.

Test on I/O and communication ports:

The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1minute.

Test on power supply ports:

The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.

Each of the Line and Neutral conductors is impressed with burst noise for 1 minute.

The length of the signal and power lines between the coupling device and the EUT is 0.5m.

10.5. Deviation from Test Standard

No deviation.

10.6. Test Result

Product	Notebook		
Test Item	Electrical fast transient/burst		
Test Mode	Mode 1		
Date of Test	2009/04/02	Test Site	No.2 Shielded Room

Inject Line	Polarity	Voltage Kv	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L+N+PE	±	1Kv	60	Direct	B	B	PASS
LAN	±	0.5Kv	60	Clamp	B	B	PASS
Telecom	±	0.5Kv	60	Clamp	B	B	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

- ☐ Meet criteria A : Operate as intended during and after the test
- ☒ Meet criteria B : Operate as intended after the test
- ☐ Meet criteria C : Loss/Error of function
- ☐ Additional Information
 - ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
- ☒ No false alarms or other malfunctions were observed during or after the test.

Product	Notebook		
Test Item	Electrical fast transient/burst		
Test Mode	Mode 2		
Date of Test	2009/04/02	Test Site	No.2 Shielded Room

Inject Line	Polarity	Voltage kV	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L+N+PE	±	1kV	60	Direct	B	B	PASS
LAN	±	0.5kV	60	Clamp	B	B	PASS
Telecom	±	0.5Kv	60	Clamp	B	B	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

- ☐ Meet criteria A : Operate as intended during and after the test
- ☒ Meet criteria B : Operate as intended after the test
- ☐ Meet criteria C : Loss/Error of function
- ☐ Additional Information
 - ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
 - ☒ No false alarms or other malfunctions were observed during or after the test.

10.7. Test Photograph

Test Mode : Mode 1

Description : EFT/B Test Setup



Test Mode : Mode 1

Description : EFT/B Test Setup-Clamp



Test Mode : Mode 2

Description : EFT/B Test Setup



Test Mode : Mode 2

Description : EFT/B Test Setup-Clamp

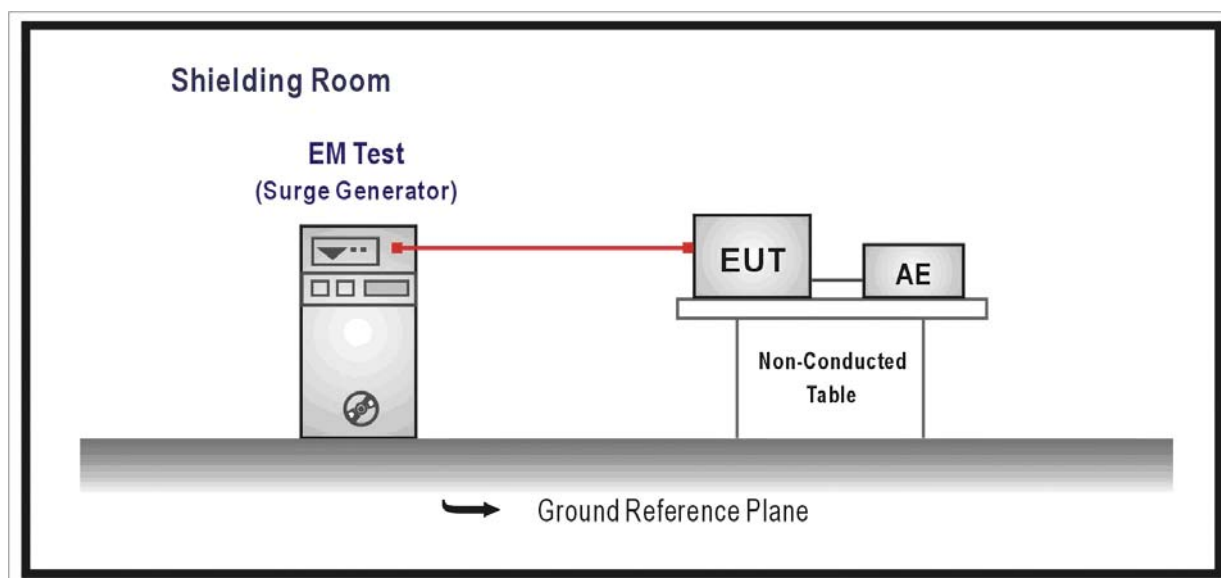


11. Surge

11.1. Test Specification

According to Standard : IEC 61000-4-5

11.2. Test Setup



11.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports(See 1) and 2))				
Surges	Line to Ground	Tr/Th us kV	1.2/50 (8/20) ± 1	B
Input DC Power Ports				
Surges	Line to Ground	Tr/Th us kV	1.2/50 (8/20) ± 0.5	B
AC Input and AC Output Power Ports				
Surges	Line to Line	Tr/Th us kV	1.2/50 (8/20) ± 1	B
	Line to Ground	kV	± 2	

Notes:

- 1) Applicable only to ports which according to the manufacturer's may directly to outdoor cables.
- 2) Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no immunity test shall be required.

11.4. Test Procedure

The EUT and its load are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The length of power cord between the coupling device and the EUT shall be 2m or less.

For Input and Output AC Power or DC Input and DC Output Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the Surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0°, 90°, 180°, 270° and the peak value of the a.c. voltage wave. (Positive and negative)

Each of Line-Earth and Line-Line is impressed with a sequence of five surge voltages with interval of 1 min.

11.5. Deviation from Test Standard

No deviation.

11.6. Test Result

Product	Notebook		
Test Item	Surge		
Test Mode	Mode 1		
Date of Test	2009/04/02	Test Site	No.2 Shielded Room

Inject Line	Polarity	Angle	Voltage kV	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N	±	0	1kV	60	Direct	B	A	PASS
L-N	±	90	1kV	60	Direct	B	A	PASS
L-N	±	180	1kV	60	Direct	B	A	PASS
L-N	±	270	1kV	60	Direct	B	A	PASS
L-PE	±	0	2kV	60	Direct	B	A	PASS
L-PE	±	90	2kV	60	Direct	B	A	PASS
L-PE	±	180	2kV	60	Direct	B	A	PASS
L-PE	±	270	2kV	60	Direct	B	A	PASS
N-PE	±	0	2kV	60	Direct	B	A	PASS
N-PE	±	90	2kV	60	Direct	B	A	PASS
N-PE	±	180	2kV	60	Direct	B	A	PASS
N-PE	±	270	2kV	60	Direct	B	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

- ☒ Meet criteria A : Operate as intended during and after the test
- ☐ Meet criteria B : Operate as intended after the test
- ☐ Meet criteria C : Loss/Error of function
- ☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

- ☒ No false alarms or other malfunctions were observed during or after the test.

Product	Notebook		
Test Item	Surge		
Test Mode	Mode 2		
Date of Test	2009/04/02	Test Site	No.2 Shielded Room

Inject Line	Polarity	Angle	Voltage kV	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N	±	0	1kV	60	Direct	B	A	PASS
L-N	±	90	1kV	60	Direct	B	A	PASS
L-N	±	180	1kV	60	Direct	B	A	PASS
L-N	±	270	1kV	60	Direct	B	A	PASS
L-PE	±	0	2kV	60	Direct	B	A	PASS
L-PE	±	90	2kV	60	Direct	B	A	PASS
L-PE	±	180	2kV	60	Direct	B	A	PASS
L-PE	±	270	2kV	60	Direct	B	A	PASS
N-PE	±	0	2kV	60	Direct	B	A	PASS
N-PE	±	90	2kV	60	Direct	B	A	PASS
N-PE	±	180	2kV	60	Direct	B	A	PASS
N-PE	±	270	2kV	60	Direct	B	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

☒ Meet criteria A : Operate as intended during and after the test

☐ Meet criteria B : Operate as intended after the test

☐ Meet criteria C : Loss/Error of function

☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

☒ No false alarms or other malfunctions were observed during or after the test.

11.7. Test Photograph

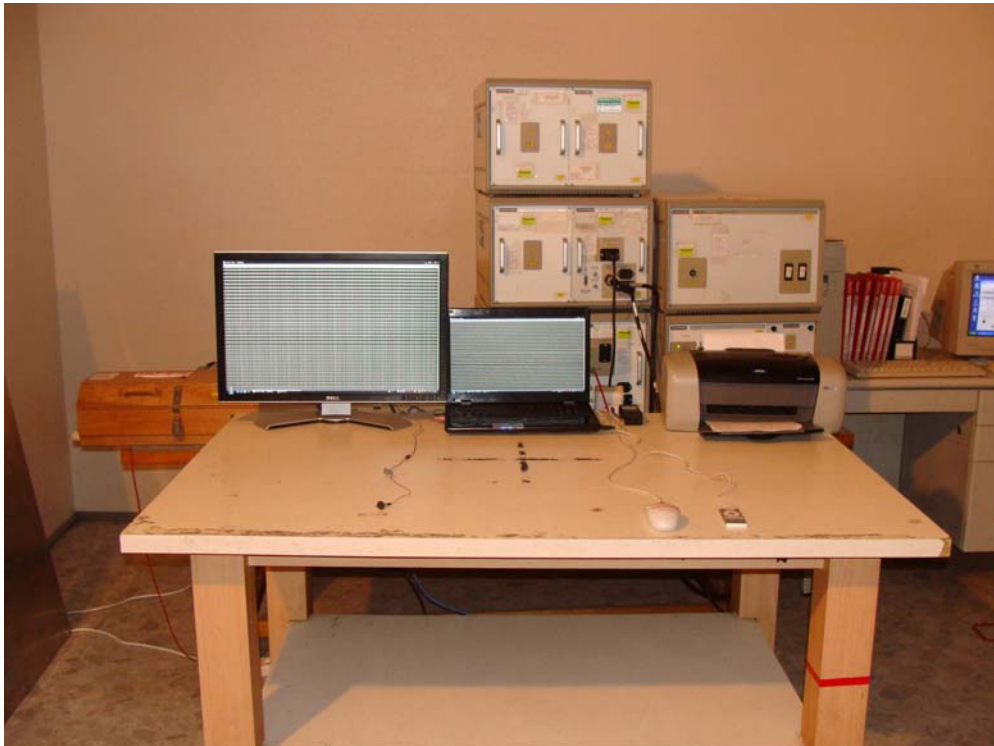
Test Mode : Mode 1

Description : SURGE Test Setup



Test Mode : Mode 2

Description : SURGE Test Setup



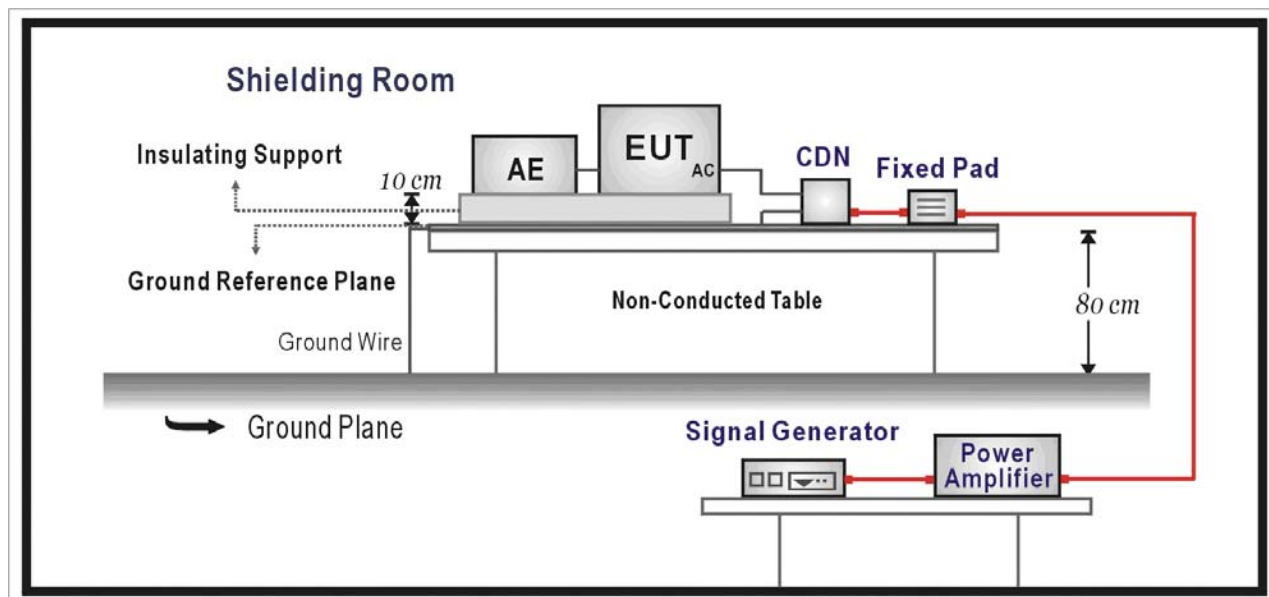
12. Conducted Susceptibility

12.1. Test Specification

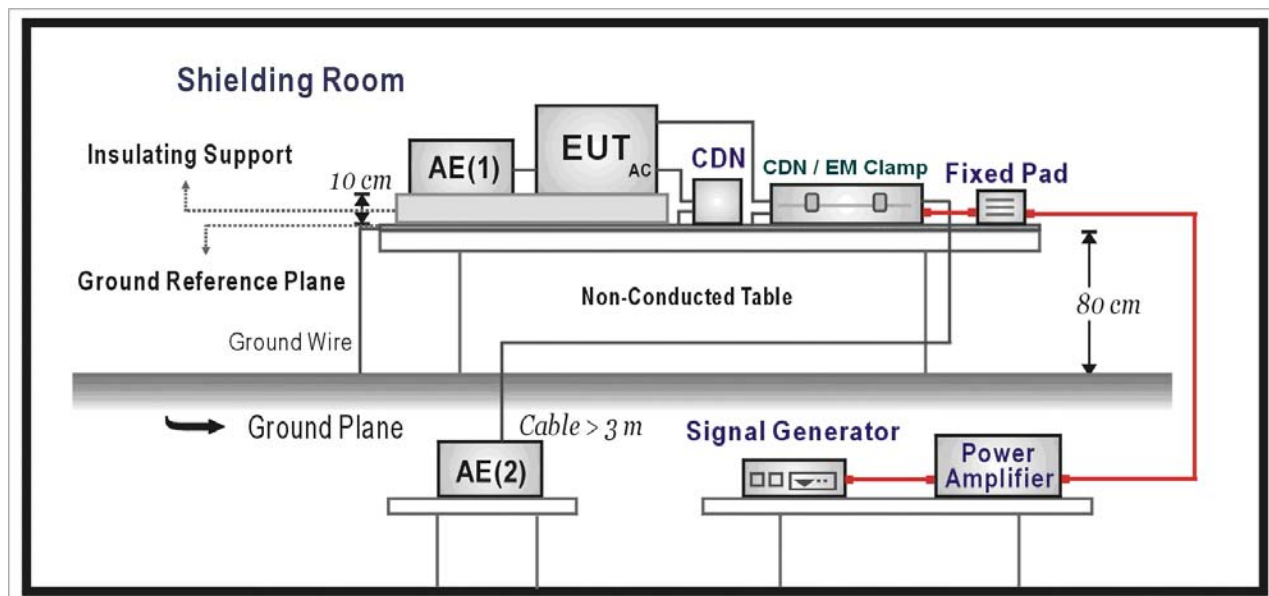
According to Standard : IEC 61000-4-6

12.2. Test Setup

CDN Test Mode



EM Clamp Test Mode



12.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input DC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input AC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A

12.4. Test Procedure

The EUT are placed on a table that is 0.8 meter height, and a Ground reference plane on the table, EUT are placed upon table and use a 10cm insulation between the EUT and Ground reference plane.

For Signal Ports and Telecommunication Ports

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and Telecommunication lines of the EUT.

For Input DC and AC Power Ports

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.

Used CDN-M2 for two wires or CDN-M3 for three wires.

All the scanning conditions are as follows:

Condition of Test	Remarks
1. Field Strength	130dBuV(3V) Level 2
2. Radiated Signal	AM 80% Modulated with 1kHz
3. Scanning Frequency	0.15MHz – 80MHz
4. Dwell Time	3 Seconds
5. Frequency step size Δf :	1%
6. The rate of Swept of Frequency	1.5×10^{-3} decades/s

12.5. Deviation from Test Standard

No deviation.

12.6. Test Result

Product	Notebook		
Test Item	Conducted susceptibility		
Test Mode	Mode 1		
Date of Test	2009/04/02	Test Site	No.6 Shielded Room

Frequency Range (MHz)	Voltage Applied dBuV(V)	Inject Method	Tested Port of EUT	Required Criteria	Performance Criteria Complied To	Result
0.15~80	130 (3V)	CDN	AC IN	A	A	PASS
0.15~80	130 (3V)	CDN	LAN	A	A	PASS
0.15~80	130 (3V)	CDN	Telecom	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

- ☒ Meet criteria A : Operate as intended during and after the test
- ☐ Meet criteria B : Operate as intended after the test
- ☐ Meet criteria C : Loss/Error of function
- ☐ Additional Information
 - ☐ EUT stopped operation and could / could not be reset by operator at ____ dBuV(V) at frequency ____MHz.
 - ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	Notebook		
Test Item	Conducted susceptibility		
Test Mode	Mode 2		
Date of Test	2009/04/02	Test Site	No.6 Shielded Room

Frequency Range (MHz)	Voltage Applied dBuV(V)	Inject Method	Tested Port of EUT	Required Criteria	Performance Criteria Complied To	Result
0.15~80	130 (3V)	CDN	AC IN	A	A	PASS
0.15~80	130 (3V)	CDN	LAN	A	A	PASS
0.15~80	130 (3V)	CDN	Telecom	A	A	PASS

Note:

The testing performed is from lowest level up to the highest level as required by standard, but only highest level is shown on the report.

- ☒ Meet criteria A : Operate as intended during and after the test
- ☐ Meet criteria B : Operate as intended after the test
- ☐ Meet criteria C : Loss/Error of function
- ☐ Additional Information
 - ☐ EUT stopped operation and could / could not be reset by operator at _____ dBuV(V) at frequency _____MHz.
 - ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

12.7. Test Photograph

Test Mode : Mode 1

Description : Conducted Susceptibility Test Setup



Test Mode : Mode 1

Description : Conducted Susceptibility Test Setup -CDN



Test Mode : Mode 2

Description : Conducted Susceptibility Test Setup



Test Mode : Mode 2

Description : Conducted Susceptibility Test Setup -CDN

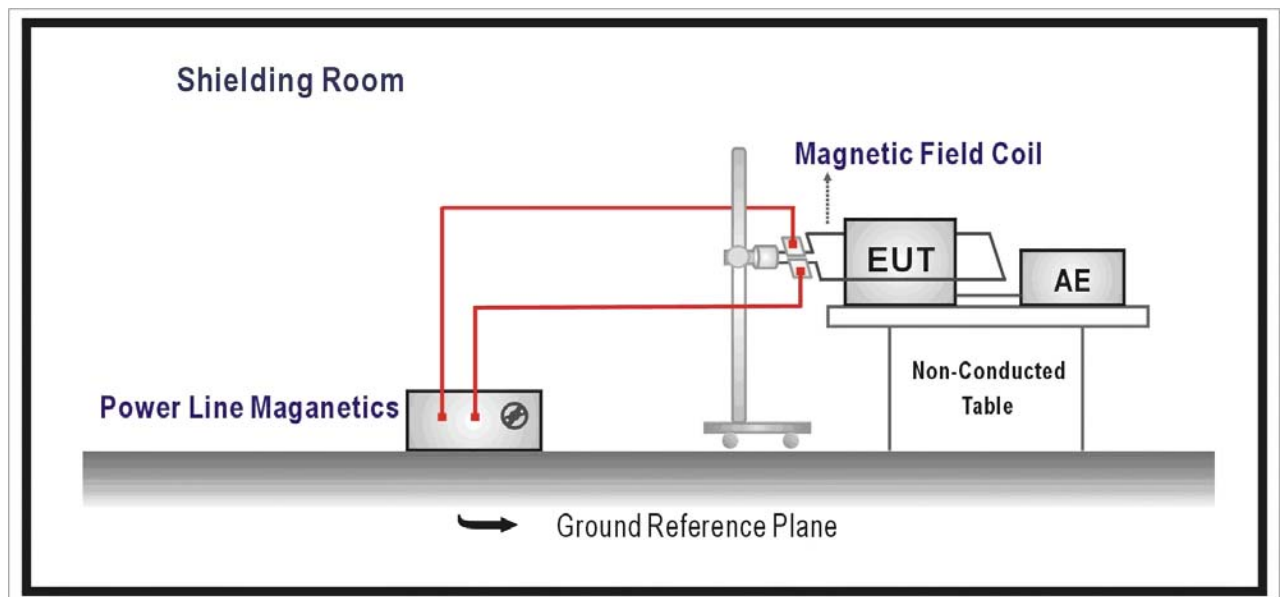


13. Power Frequency Magnetic Field

13.1. Test Specification

According to Standard : IEC 61000-4-8

13.2. Test Setup



13.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Power-Frequency Magnetic Field	Hz A/m (r.m.s.)	50 1	A

13.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured at least 1m*1m min. The test magnetic field shall be placed at central of the induction coil.

The test magnetic Field shall be applied 10 minutes by the immersion method to the EUT. And the induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z Orientations).

13.5. Deviation from Test Standard

No deviation.

13.6. Test Result

Product	Notebook		
Test Item	Power frequency magnetic field		
Test Mode	Mode 1		
Date of Test	2009/04/02	Test Site	No.3 Shielded Room

Polarization	Frequency (Hz)	Magnetic Strength (A/m)	Required Performance Criteria	Performance Criteria Complied To	Test Result
X Orientation	50	1	A	A	PASS
Y Orientation	50	1	A	A	PASS
Z Orientation	50	1	A	A	PASS

- ☒ Meet criteria A: Operate as intended during and after the test
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
 - ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	Notebook		
Test Item	Power frequency magnetic field		
Test Mode	Mode 2		
Date of Test	2009/04/02	Test Site	No.3 Shielded Room

Polarization	Frequency (Hz)	Magnetic Strength (A/m)	Required Performance Criteria	Performance Criteria Complied To	Test Result
X Orientation	50	1	A	A	PASS
Y Orientation	50	1	A	A	PASS
Z Orientation	50	1	A	A	PASS

- ☒ Meet criteria A: Operate as intended during and after the test
☐ Meet criteria B: Operate as intended after the test
☐ Meet criteria C: Loss/Error of function
☐ Additional Information
☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

13.7. Test Photograph

Test Mode : Mode 1

Description : Power Frequency Magnetic Field Test Setup



Test Mode : Mode 2

Description : Power Frequency Magnetic Field Test Setup

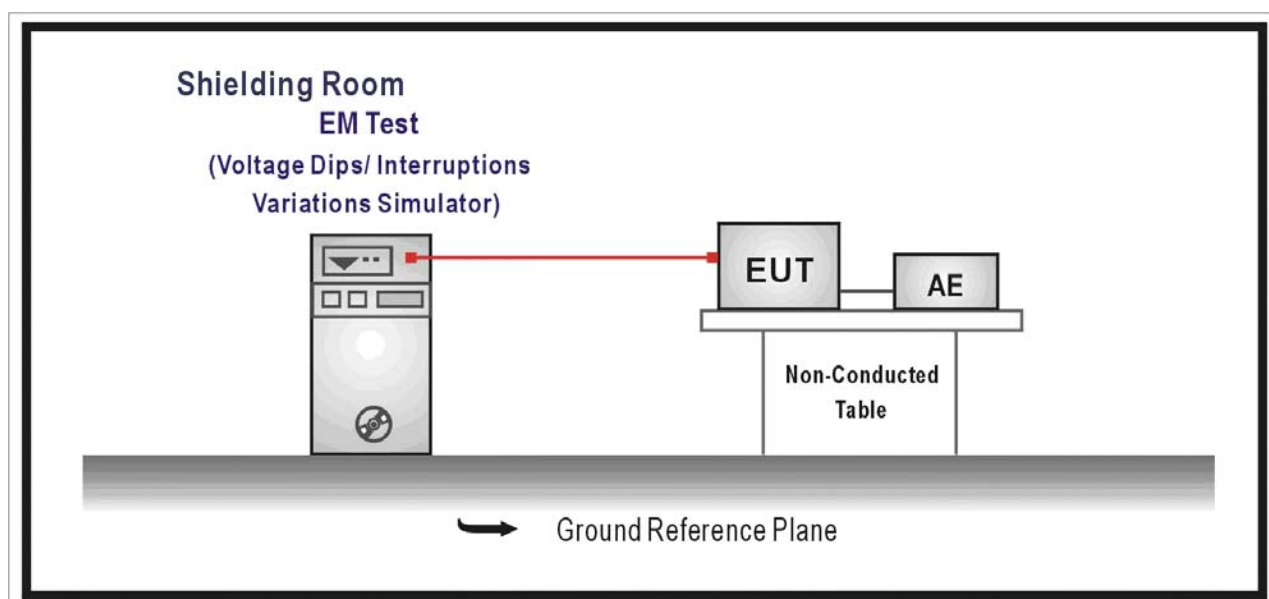


14. Voltage Dips and Interruption

14.1. Test Specification

According to Standard : IEC 61000-4-11

14.2. Test Setup



14.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Input AC Power Ports				
Voltage Dips		% Reduction	30	C
		Period	25	
Voltage Interruptions		% Reduction	>95	B
		Period	0.5	
Voltage Interruptions		% Reduction	> 95	C
		Period	250	

14.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m min. And 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage Dips/ Interruptions test:

The selection of test voltage is based on the rated power range. If the operation range is large than 20% of lower power range, both end of specified voltage shall be tested.

Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

The EUT shall be tested for 30% voltage dip of supplied voltage and duration 25 Periods, for 95% voltage dip of supplied voltage and duration 0.5 Periods with a sequence of three voltage dips with intervals of 10 seconds, and for 95% voltage interruption of supplied voltage and duration 250 Periods with a sequence of three voltage interruptions with intervals of 10 seconds.

Voltage phase shifting are shall occur at 0° , 45° , 90° , 135° , 180° , 225° , 270° , 315° of the voltage.

14.5. Deviation from Test Standard

No deviation.

14.6. Test Result

Product	Notebook		
Test Item	Voltage dips and interruption		
Test Mode	Mode 1		
Date of Test	2009/04/01	Test Site	No.2 Shielded Room

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Performance Criteria Complied To	Test Result
30(161V)	0	25	C	A	PASS
30(161V)	45	25	C	A	PASS
30(161V)	90	25	C	A	PASS
30(161V)	135	25	C	A	PASS
30(161V)	180	25	C	A	PASS
30(161V)	225	25	C	A	PASS
30(161V)	270	25	C	A	PASS
30(161V)	315	25	C	A	PASS
>95(0V)	0	0.5	B	A	PASS
>95(0V)	45	0.5	B	A	PASS
>95(0V)	90	0.5	B	A	PASS
>95(0V)	135	0.5	B	A	PASS
>95(0V)	180	0.5	B	A	PASS
>95(0V)	225	0.5	B	A	PASS
>95(0V)	270	0.5	B	A	PASS
>95(0V)	315	0.5	B	A	PASS
>95(0V)	0	250	C	B	PASS
>95(0V)	45	250	C	B	PASS
>95(0V)	90	250	C	B	PASS
>95(0V)	135	250	C	B	PASS
>95(0V)	180	250	C	B	PASS
>95(0V)	225	250	C	B	PASS
>95(0V)	270	250	C	B	PASS
>95(0V)	315	250	C	B	PASS

- ☒ Meet criteria A: Operate as intended during and after the test
- ☒ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
 - ☐ The nominal voltage of EUT is 230V.
 - ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	Notebook		
Test Item	Voltage dips and interruption		
Test Mode	Mode 2		
Date of Test	2009/04/01	Test Site	No.2 Shielded Room

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Performance Criteria Complied To	Test Result
30(161V)	0	25	C	A	PASS
30(161V)	45	25	C	A	PASS
30(161V)	90	25	C	A	PASS
30(161V)	135	25	C	A	PASS
30(161V)	180	25	C	A	PASS
30(161V)	225	25	C	A	PASS
30(161V)	270	25	C	A	PASS
30(161V)	315	25	C	A	PASS
>95(0V)	0	0.5	B	A	PASS
>95(0V)	45	0.5	B	A	PASS
>95(0V)	90	0.5	B	A	PASS
>95(0V)	135	0.5	B	A	PASS
>95(0V)	180	0.5	B	A	PASS
>95(0V)	225	0.5	B	A	PASS
>95(0V)	270	0.5	B	A	PASS
>95(0V)	315	0.5	B	A	PASS
>95(0V)	0	250	C	B	PASS
>95(0V)	45	250	C	B	PASS
>95(0V)	90	250	C	B	PASS
>95(0V)	135	250	C	B	PASS
>95(0V)	180	250	C	B	PASS
>95(0V)	225	250	C	B	PASS
>95(0V)	270	250	C	B	PASS
>95(0V)	315	250	C	B	PASS

- ☒ Meet criteria A: Operate as intended during and after the test
☒ Meet criteria B: Operate as intended after the test
☐ Meet criteria C: Loss/Error of function
☐ Additional Information
☐ The nominal voltage of EUT is 230V.
☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

14.7. Test Photograph

Test Mode : Mode 1

Description : Voltage Dips Test Setup



Test Mode : Mode 2

Description : Voltage Dips Test Setup



15. Attachment**➤ EUT Photograph**

(1) EUT Photo



(2) EUT Photo



(3) EUT Photo



(4) EUT Photo



(5) EUT Photo



(6) EUT Photo



(7) EUT Photo



(8) EUT Photo



(9) EUT Photo



(10) EUT Photo

